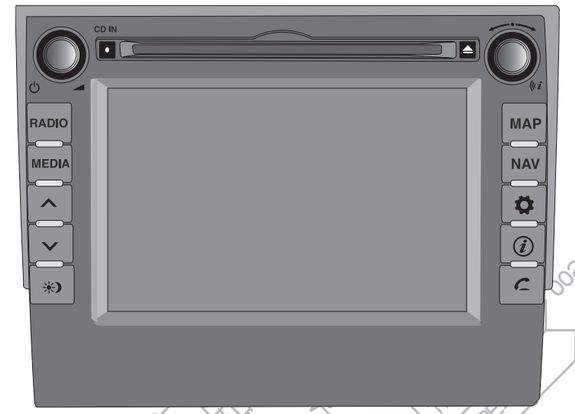
SERVICE MANUAL

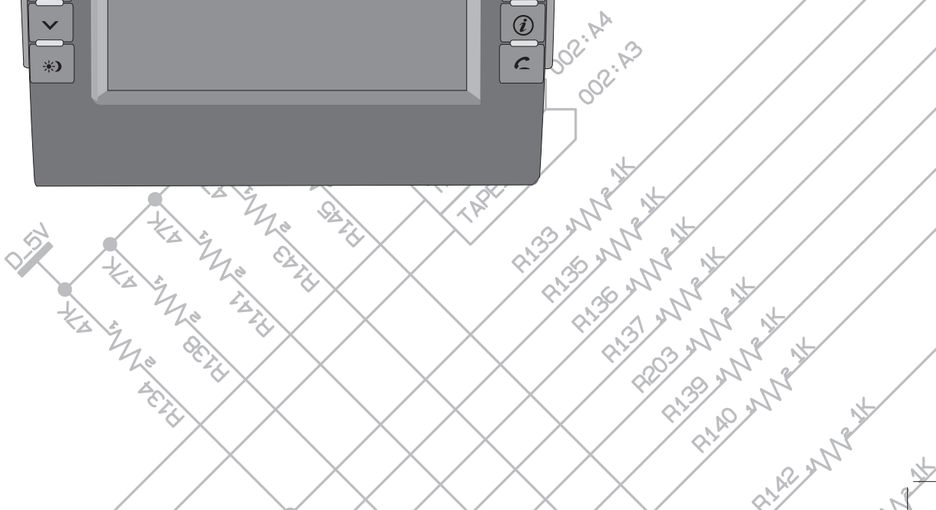
MODELS: LAN8901EHCM/LAN8902EHCM

AUDIO & NAVIGATION SYSTEM

SERVICE MANUAL

MODELS: LAN8901EHCM/ LAN8902EHCM





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SECTION 8. GPS PART

SECTION 9. TROUBLESHOOTING GUIDE

SECTION 10. REPLACEMENT PARTS LIST

SECTION 1. SPECIFICATION

[CONTENTS]

• SPECIFICATION 1-1

SPECIFICATION

GENERAL

Output Power	.45 W x 8 CH (Max.)
Power Source	DC 12 V
Speaker impedance	2 Ω
Ground System	Negative
Dimensions (W x H x D)	204 x 146 x 164 mm
Net Weight	2.7 kg

DISPLAY

LCD	16.5 cm TFT LCD
Resolution	.800 X 480
Back Light	CCFL type

CD SECTION

Frequency Response	20 Hz to 20 KHz
S/N Ratio	60 dB
Distortion	0.3 %
Channel Separation (1 kHz)	50 dB

RADIO SECTION

FM

Frequency Range	87.5 to 108 MHz
S/N Ratio	50 dB
Distortion	1 %
Usable Sensitivity	10 dBμV

AM (MW)

Frequency Range	522 to 1620 KHz
S/N Ratio	45 dB
Distortion	1.0 %
Usable Sensitivity	38 dBμV

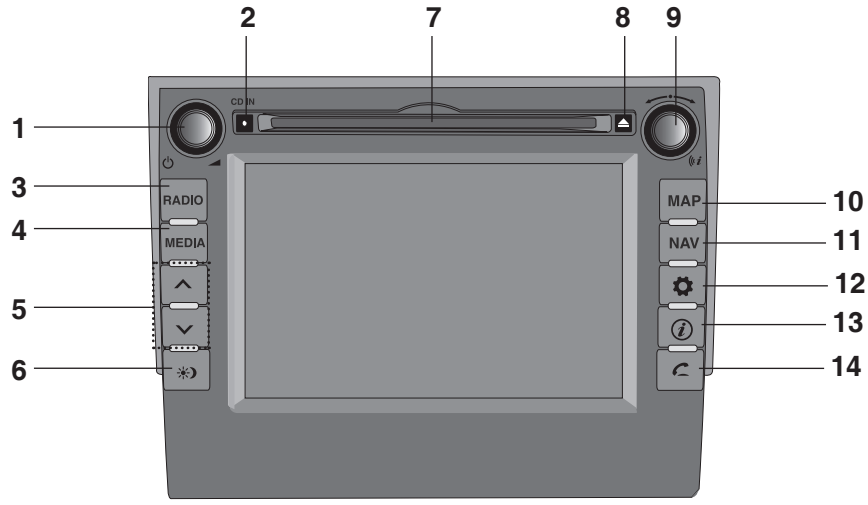
MEMO

SECTION 2. NAME OF EACH PART

[CONTENTS]

• FRONT 2-1
• CONNECTOR TERMINAL FUNCTION 2-2

FRONT



1. Left rotary (⏻ / ◢)
- Press: Power on/off
- Turn: Volume control

2. CD IN indicator light (CD IN)
When a disc is inserted, the indicator is illuminated.

3. RADIO
Selects the FM/AM band.

4. MEDIA
Selects a source: CD, USB, iPod, AUX

5. ^ / v
- Press this button.
  - Automatic tuning: RADIO
  - Track up/down: USB CD iPod
- Press and hold this button.
  - Search (FF/REW): USB CD iPod

6. Display on/off (☼)
Press to switch between the display on and off.

7. Disc slot

8. Eject (⏏)
Press to eject a disc from the unit.

9. Right rotary (⌒)
Rotate it clockwise/counterclockwise.
- Searches the previous or next radio frequency.
  - Manual tuning
- Skips a track/file up/down in all list screen.
- ZOOM IN/ ZOOM OUT
  - Rotate to change the map scale on the map screen.

Repeat voice guidance (((i)
Press to repeat the voice guidance.

10. MAP
Press to display the current location map screen.

11. NAV
Press to enter a destination menu.
Various methods for entering a destination are available.

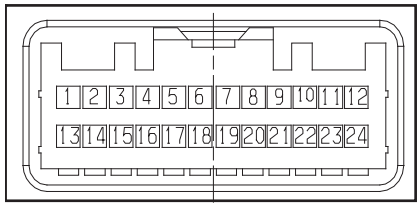
12. SETUP (✿)
- Press to access system settings.
- Press and hold to check the device ID, the software version, the navigation version, and the map version.

13. Info(ⓘ)
Press to view the destination, route, and traffic information when the route guidance is active.
- Destination: Shows the information of current vehicle position and destination.
- Route: Shows the route information from the current vehicle position to the destination.
- Traffic: Shows the traffic information.
  - Traffic Info On Route: The list of traffic information found on the recommended route from the current vehicle position to the destination is displayed.
  - Traffic Info Nearby: The list of traffic information around the current vehicle position is displayed.

14. PHONE (✆)
Use to enable Bluetooth Hands-Free Phone.

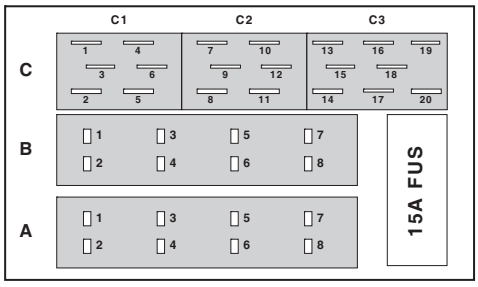
CONNECTOR TERMINAL FUNCTION

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B+(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

B. ISO 36pin POWER CONNECTOR

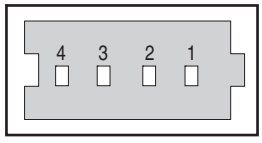


A. CAR INTERFACE	
A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT	
B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

C1. CAR INTERFACE	
C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light
C2. CAR INTERFACE	
C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT
C3. CAR INTERFACE	
C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

C. USB CONNECTOR



No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

MEMO

SECTION 3. TOTAL WIRING/BLOCK DIAGRAMS

[CONTENTS]

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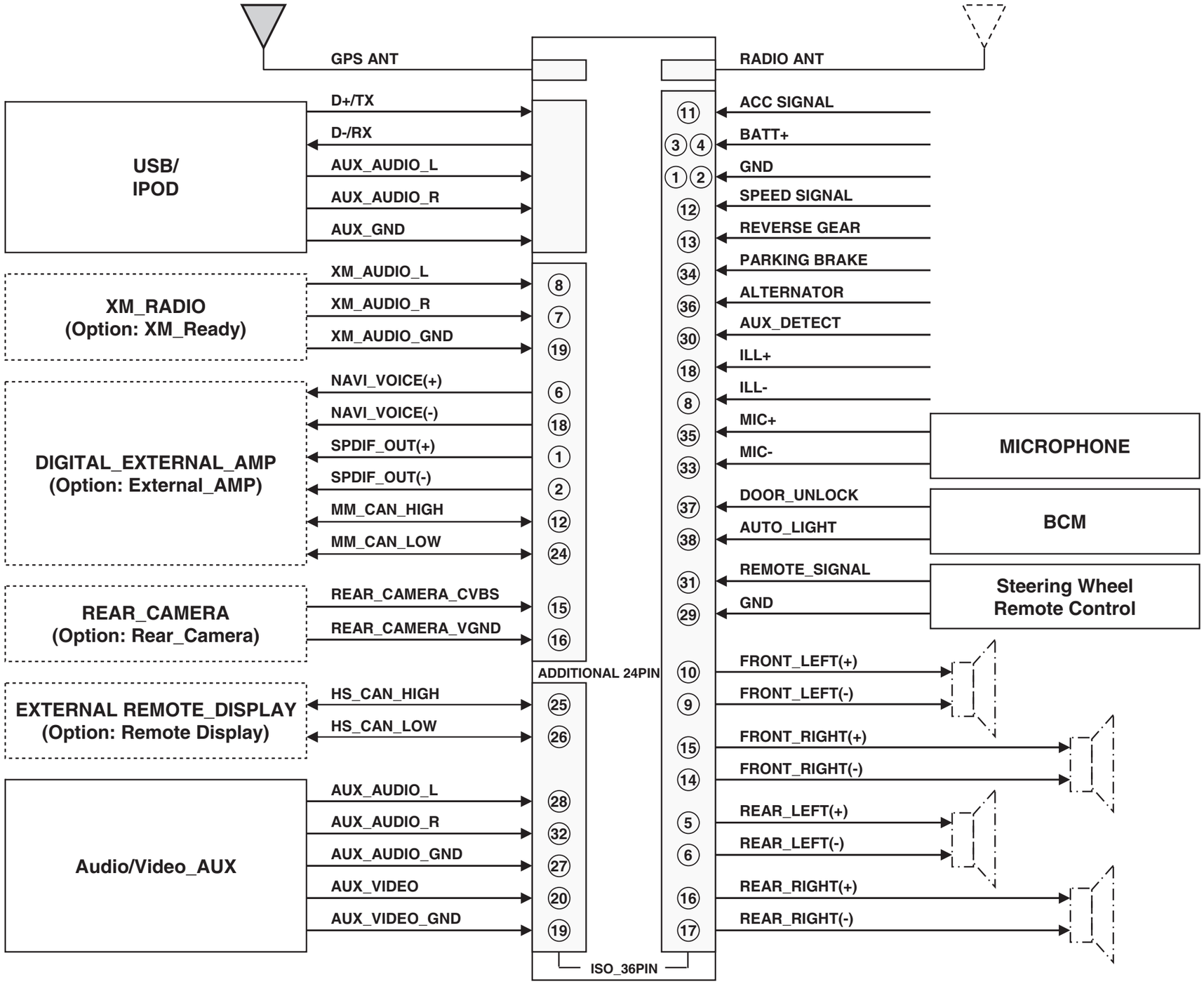
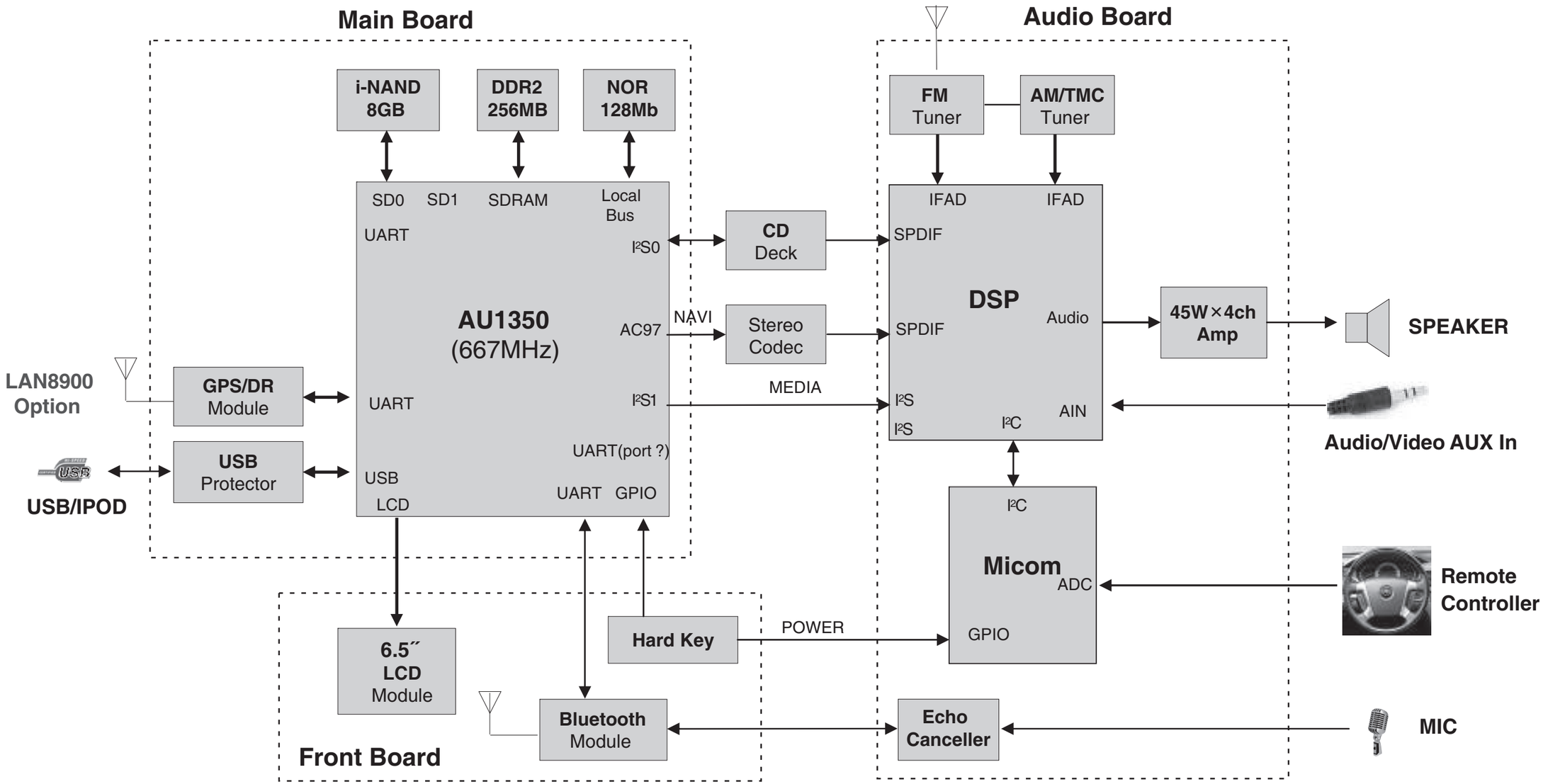
• BLOCK DIAGRAM(S/W) 3-5

WIRING DIAGRAM

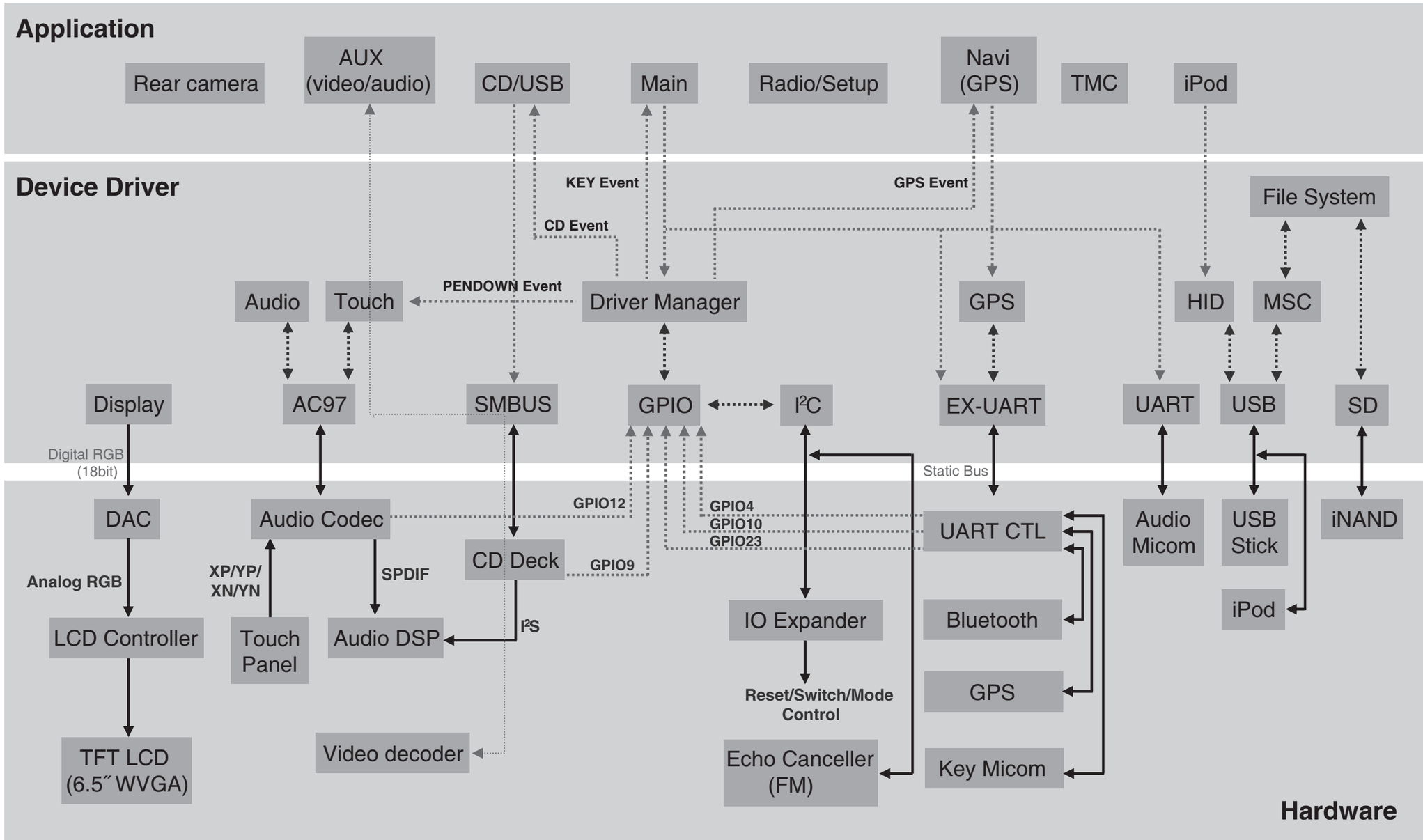


3-1 3-2

BLOCK DIAGRAM (H/W)



BLOCK DIAGRAM (S/W)



MEMO

MEMO

SECTION 4. EXPLODED VIEWS

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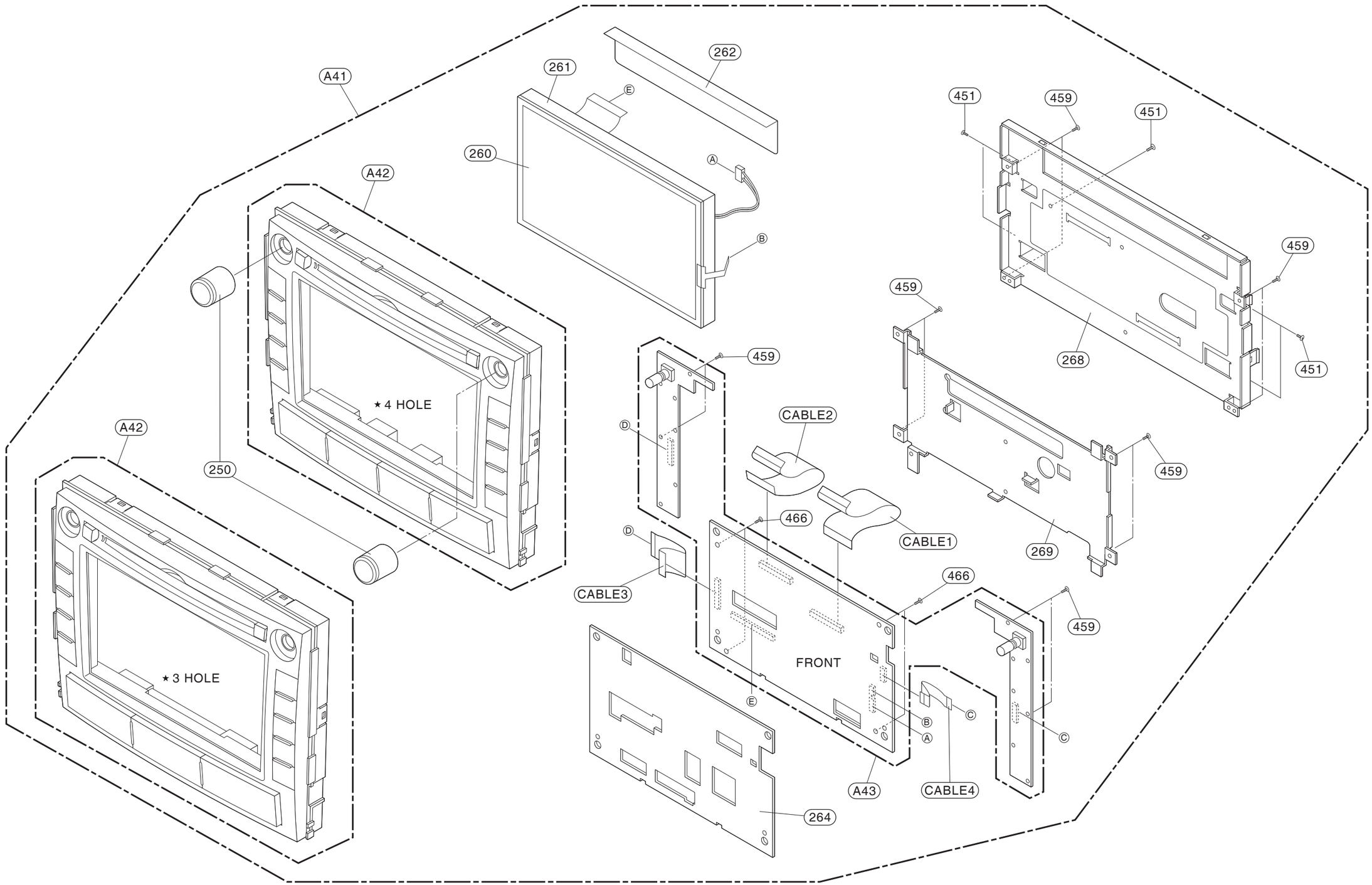
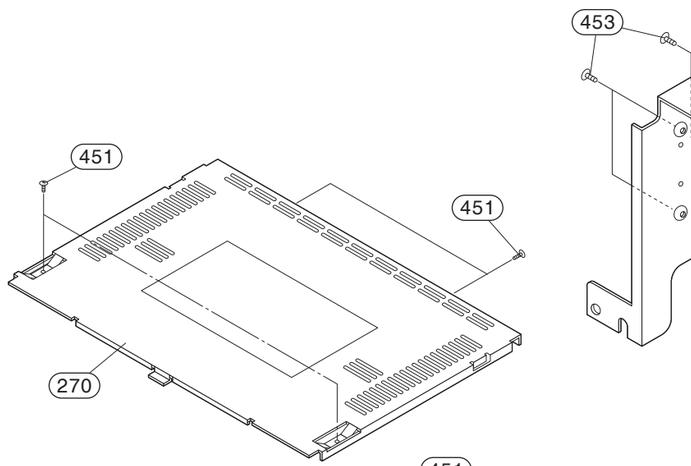
• CABINET & MAIN FRAME PART 4-3
• EXPLODED VIEW PART LIST 4-5

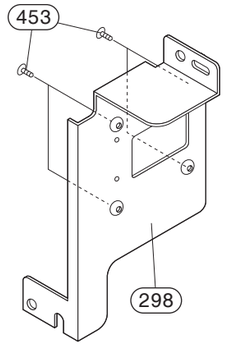
FRONT PART

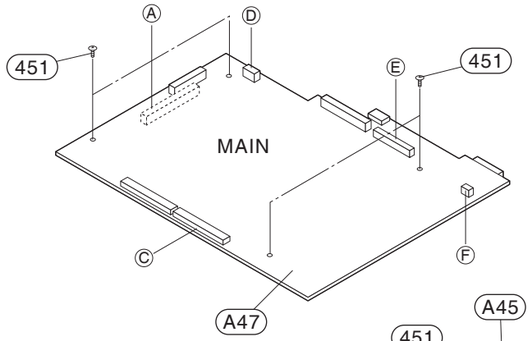


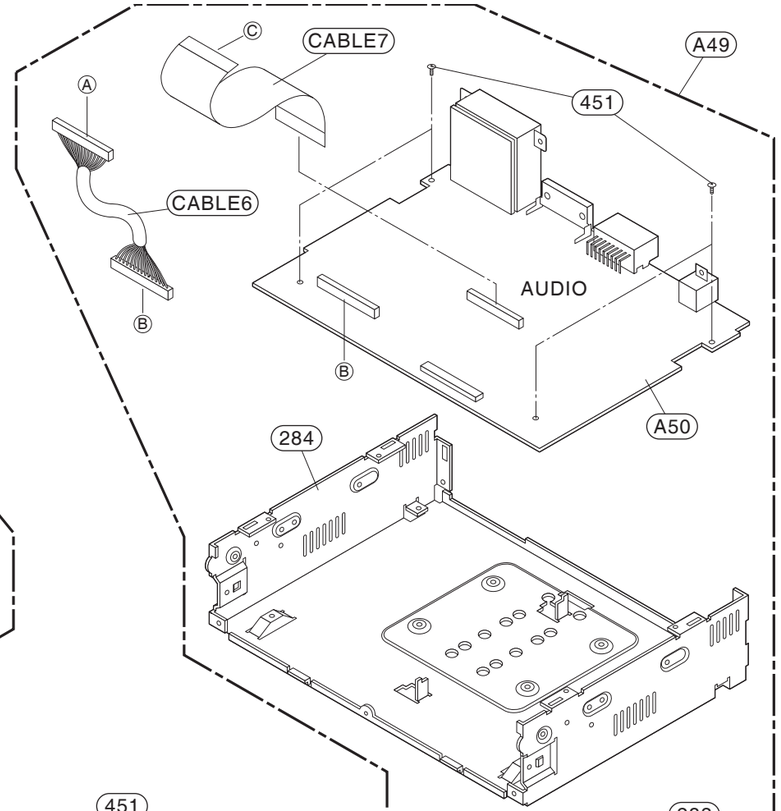
4-1 4-2

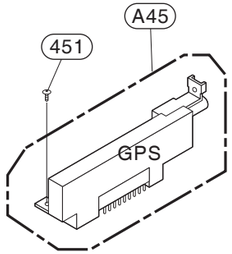
CABINET & MAIN FRAME PART

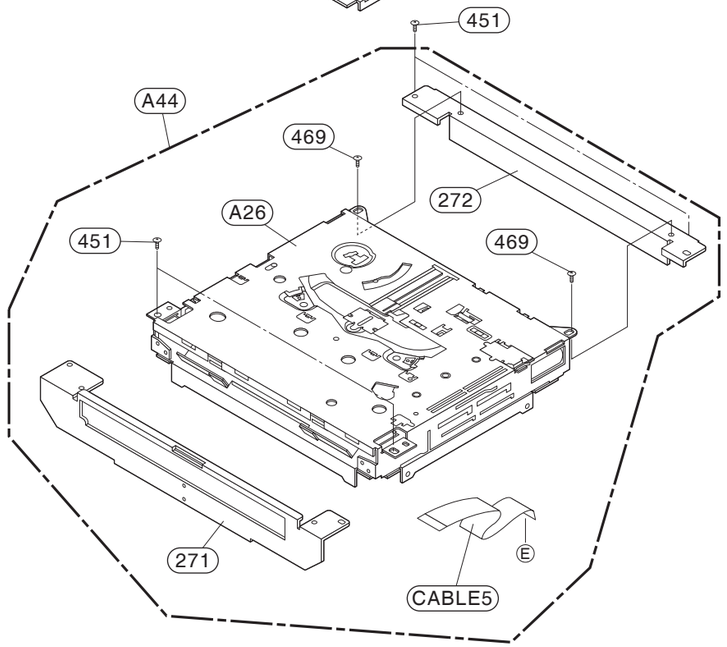


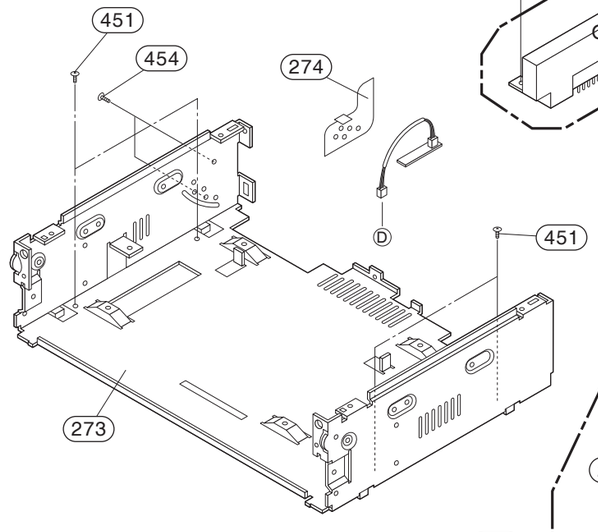


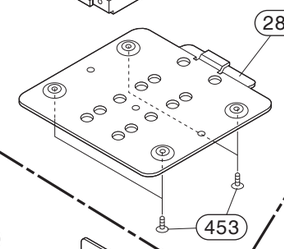


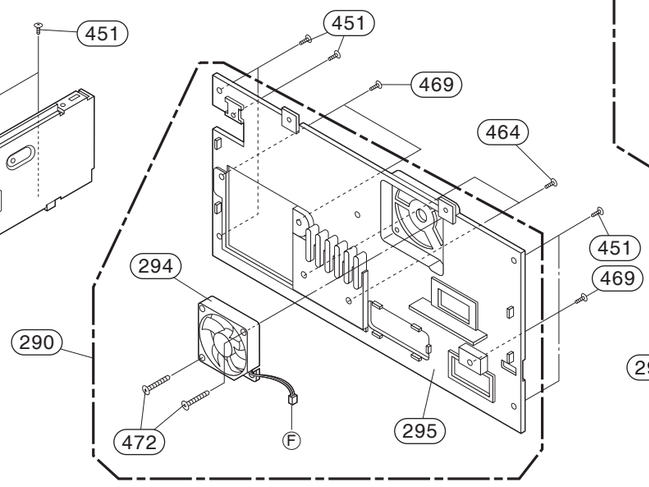


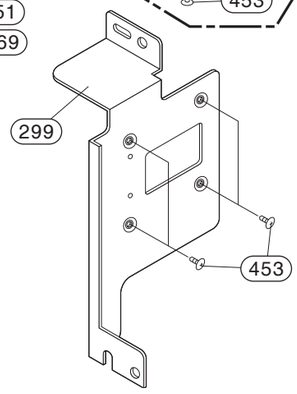












EXPLODED VIEW PART LIST

MODELS: LAN8901EHCM (4 HOLE), LAN8902EHCM (3 HOLE)

RUN DATE : 04-May-2010

S	AL	LOCA. NO.	PART NO.	DESCRIPTION	SPECIFICATION	REMARKS
				ASSEMBLY PARTS SECTION		
		A26	AFP72909301	Mechanism Assembly	CDM-M10 PHILIPS CAR CDP -	
		A41	AGL72926803	Panel Assembly,Front	CAR LAN8901EHCM FRONT TOTAL AS	LAN8901EHCM
		A41	AGL73054401	Panel Assembly,Front	CAR LAN8902EHCM FRONT TOTAL AS	LAN8902EHCM
		A42	AGL72972501	Panel Assembly	CAR LAN-8900EHCM FRONT PANEL S	LAN8901EHCM
		A42	AGL72972601	Panel Assembly	CAR LAN-8900EHCM FRONT PANEL S	LAN8902EHCM
		A43	EBR60479317	Option Code Assembly	LAN8900CM Front total Event -	
		A44	ADV72942901	Frame Assembly	CAR LAN8900YN M10 DECK TOTAL A	
		A45	ABQ67522301	Case Assembly	LT-260VG GPS MODULE ASSY	
		A47	EBR66594501	Option Code Assembly	LAN8901/2EHCM - MAIN TOTAL H/W	
		A49	ADV73106101	Frame Assembly	CAR LAN-8900EHCM LOWER TOTAL A	
		A50	EBR60385006	PCB Assembly,Audio	LAN8900CM INTERNAL AMP AUDIO A	
				PARTS SECTION		
		250	ABH73219701	Button Assembly	LAN-8900EHCM VOLUME KNOB ASSY	
		260	EBD52850703	Touch Panel	N010-0521-T142 Glass to Film P	
		261	EAJ42931001	LCD,Module-TFT	LTA065B1D4F WVGA 6.5INCH 800X4	
		262	MHK60529801	Sheet	EXTRUSION CU CDT 138.2 27 0.05	
		264	MEG61107301	Holder	MOLD PC GP-1000M CAR LAN8900 M	
		268	MAZ61984001	Bracket	PRESS SECC 0.8 CAR LAN-8900EHC	
		269	MAZ61984101	Bracket	PRESS SECC 1 CAR LAN-8900EHCM	
		270	MCK61108201	Cover	PRESS SECC 0.8mm CAR LAN8900 P	
		271	MAZ61108401	Bracket	PRESS SECC 1.0MM CAR LAN8900 P	
		272	MAZ61875601	Bracket	PRESS SECC 1.0 CAR LAN8900YN/E	
		273	MBS61107801	Chassis	PRESS SECC 1.0mm LAN8900 PRESS	
		274	ABB67522401	Brake Assembly	LT-260VG GYRO ASSY	
		283	ABA72968601	Bracket Assembly	CAR LAN-8900EHCM VIBRATION BRA	
		284	MBS61107901	Chassis	PRESS SECC 1.0mm LAN8900 PRESS	
		290	AEF72918603	Heat Sink Assembly	AL DC 178X100X5 LAN8910NHHD HE	
		294	EAL60659601	Fan Module	GM1203PFV2-8 8KRPM DC 12V 42MA	
		295	MED61845501	Heat Sink	CASTING ALDC12 AL DC 177.5X96.	
		298	MAZ61983601	Bracket	PRESS SECC 1.2 CAR LAN-8900EHC	
		299	MAZ61983701	Bracket	PRESS SECC 1.2 CAR LAN-8900EHC	
				SCREWS		
		451	1SZZR-0088D	Screw,Customized	1SZZR-0088D PH + 2.6MM 6MM SWR	
		453	1SZZR-0053B	Screw,Customized	- + 4MM 6MM SWRCH -	
		454	1SZZR-0088A	Screw,Customized	- + 2.6MM 5MM SWRCH FZY SIN J	
		459	353-645A	Screw,Customized	353-645A PH + 4.3M 8M SWRCH BL	
		464	1MRC0302818	Screw,Machine	RH + 3MM 12MM MSWR FZY - -	
		466	FAB30060701	Screw,Customized	1SZZR-0105 FH + 3.5MM 2MM SWRC	
		469	353-022M	Screw,Customized	TAPTITE 3X6 FZMY PAN S-TYPE	
		472	1MBC0263016	Screw,Machine	BH + 2.6MM 14MM MSWR FZB - -	
				CABLES		
		CABLE1	EAD36248207	Cable,FFC	AT10030120D04 120MM 1.00MM 30P	
		CABLE2	EAD61073201	Cable,FFC	AT05050060C07 60MM 0.50MM 50P	
		CABLE3	EAD60970001	Cable,FFC	AT05030040C02 40MM 0.50MM 30P	
		CABLE4	EAD60969901	Cable,FFC	AT05020040C02 40MM 0.50MM 20P	
		CABLE5	EAD35204903	Cable,FFC	AT10018100D02 100MM 1.00MM 18P	
		CABLE6	EAD60947501	Harness,Single	NI080515H 15 Pin Housing Conne	
		CABLE7	EAD56949603	Cable,FFC	AT05045100C02 100MM 0.50MM 45P	
				OWNER'S MANUAL		
		801	AFN73471822	Manual Assembly,Owners	CAR LAN8900EHCM.AKORHHB HYUNDA	

MEMO

MEMO

MEMO

SECTION 5. MAIN PART

[CONTENTS]

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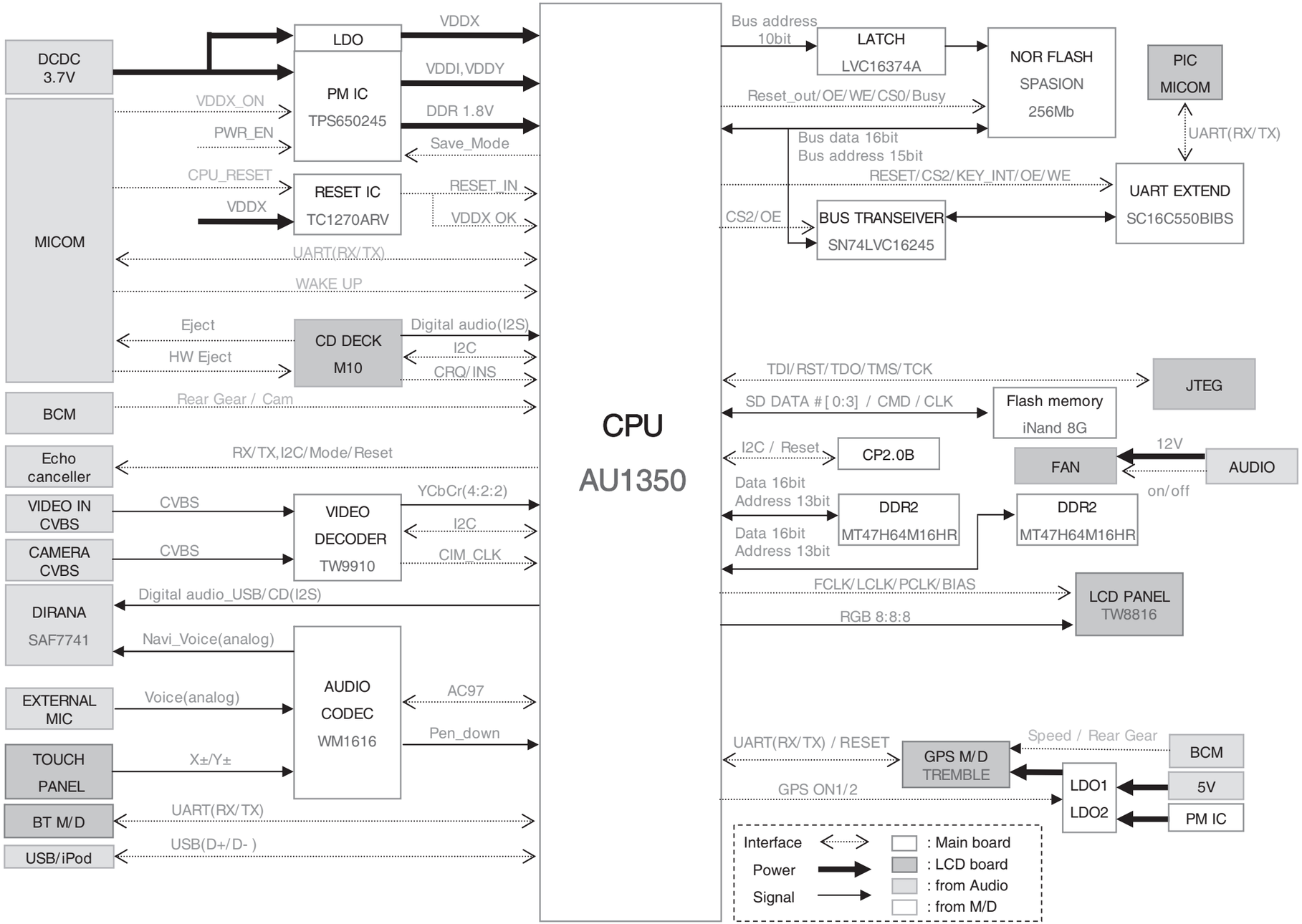
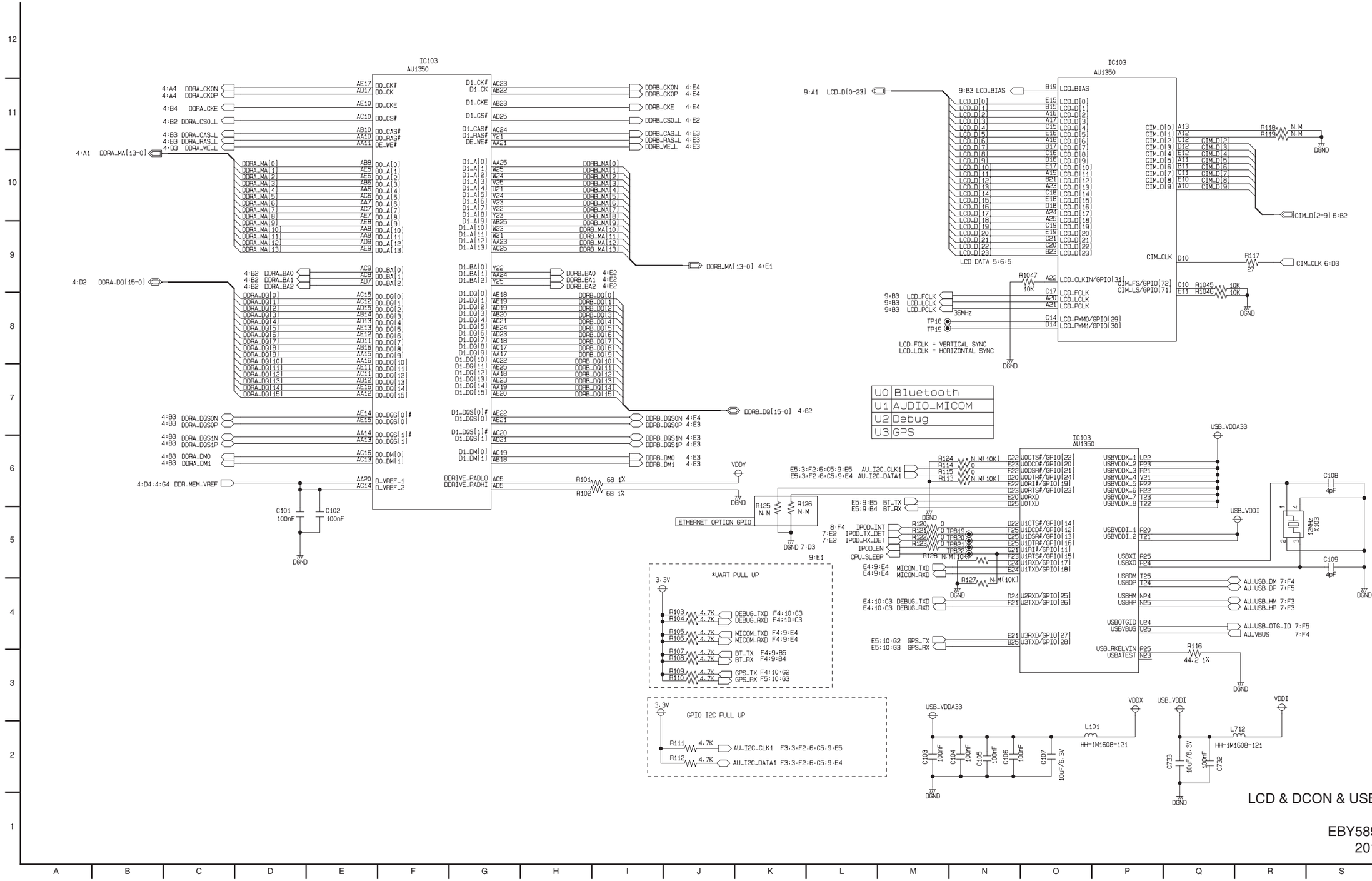
MAIN BLOCK DIAGRAM

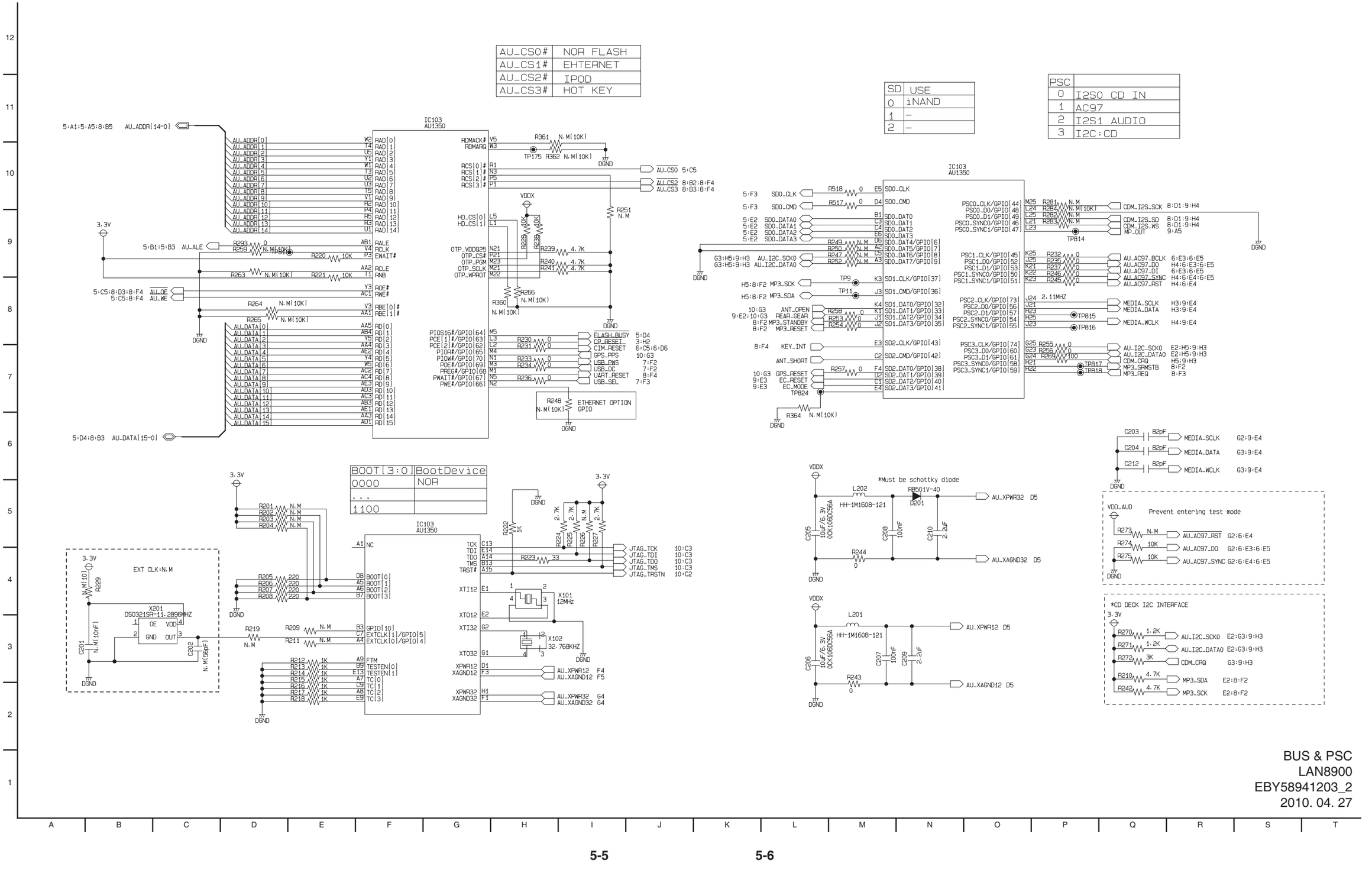


MAIN SCHEMATIC DIAGRAM (LCD & DCON & USB & UART)



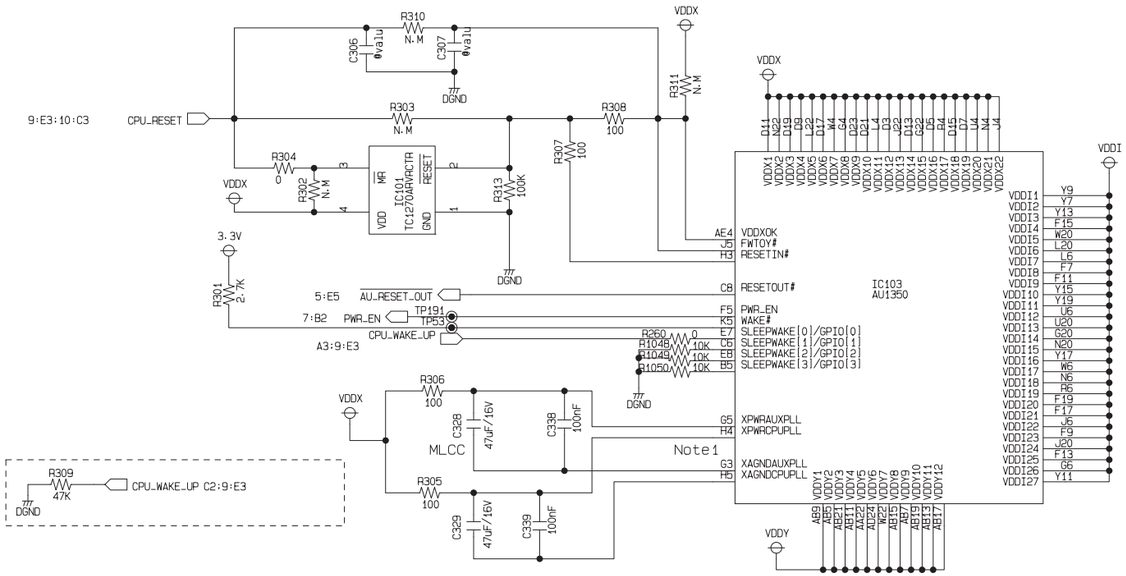
LCD & DCON & USB & UART
LAN8900
EBY58941203_1
2010. 04. 27

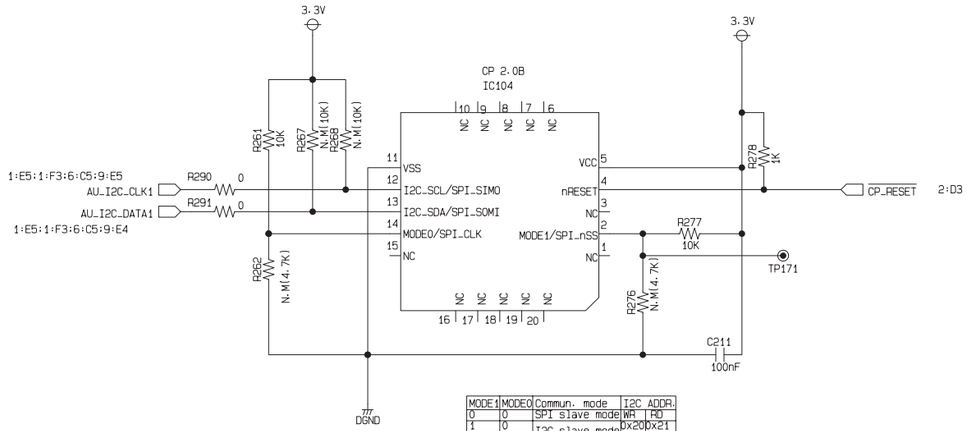
MAIN SCHEMATIC DIAGRAM (BUS & PSC)

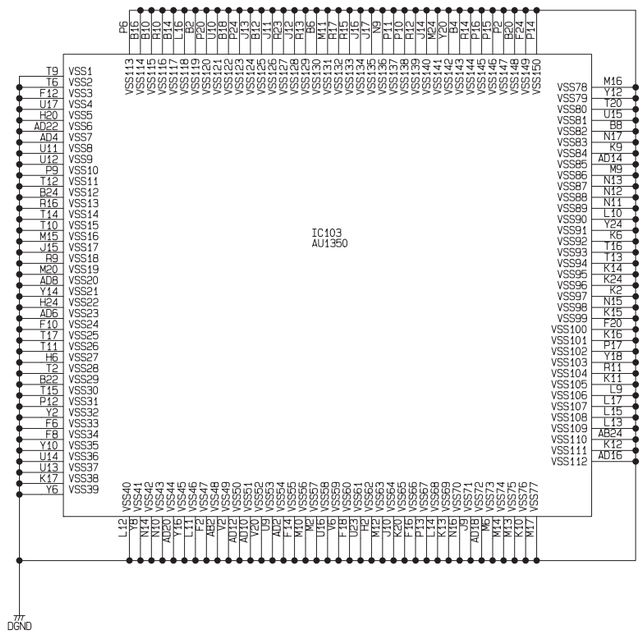


BUS & PSC
LAN8900
EBY58941203_2
2010. 04. 27

MAIN SCHEMATIC DIAGRAM (VDD & BOOT & RESET & IPOD CP)

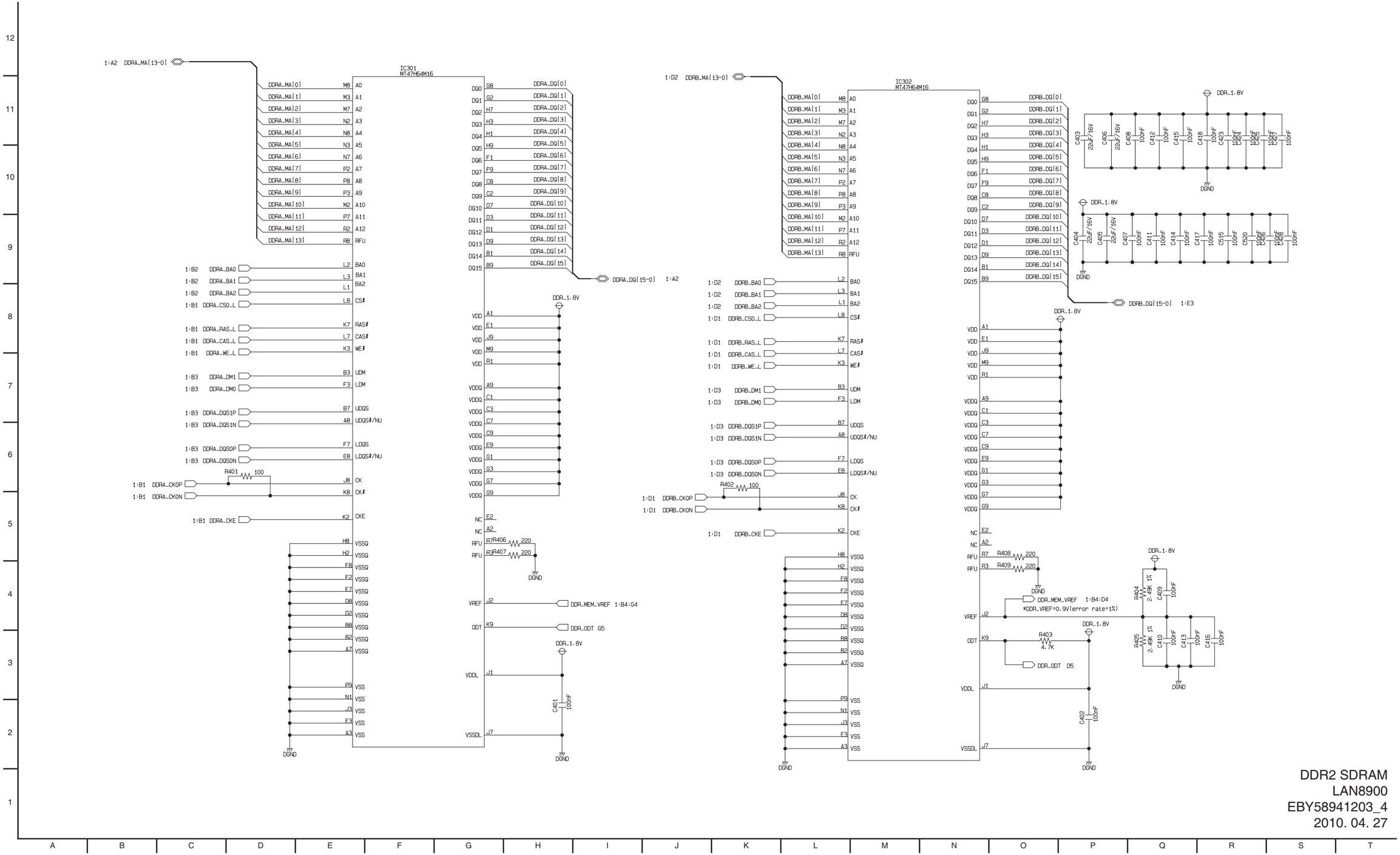




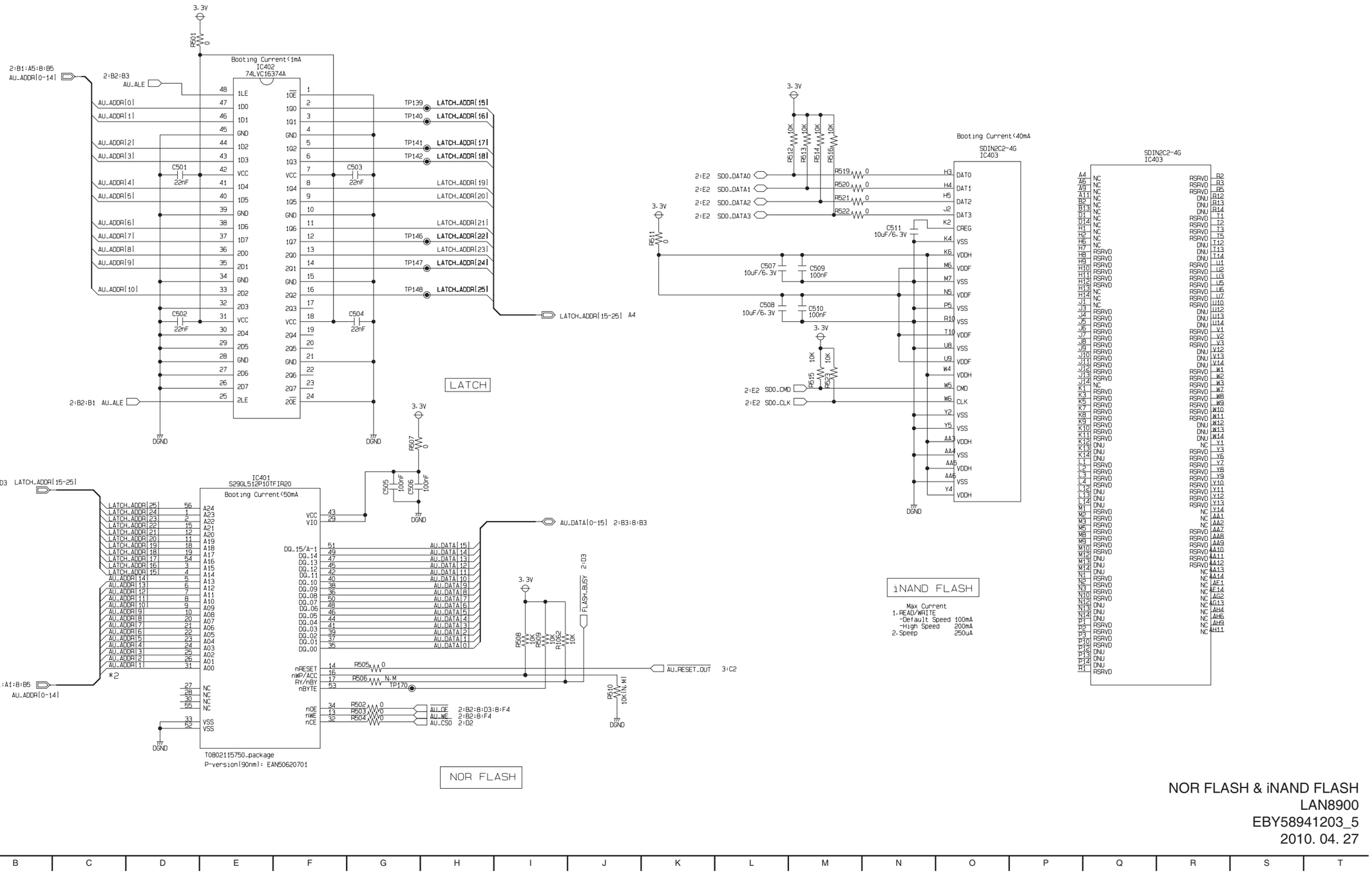


VDD & BOOT & RESET & IPOD CP
LAN8900
EBY58941203_3
2010. 04. 27

MAIN SCHEMATIC DIAGRAM (DDR2 SDRAM)

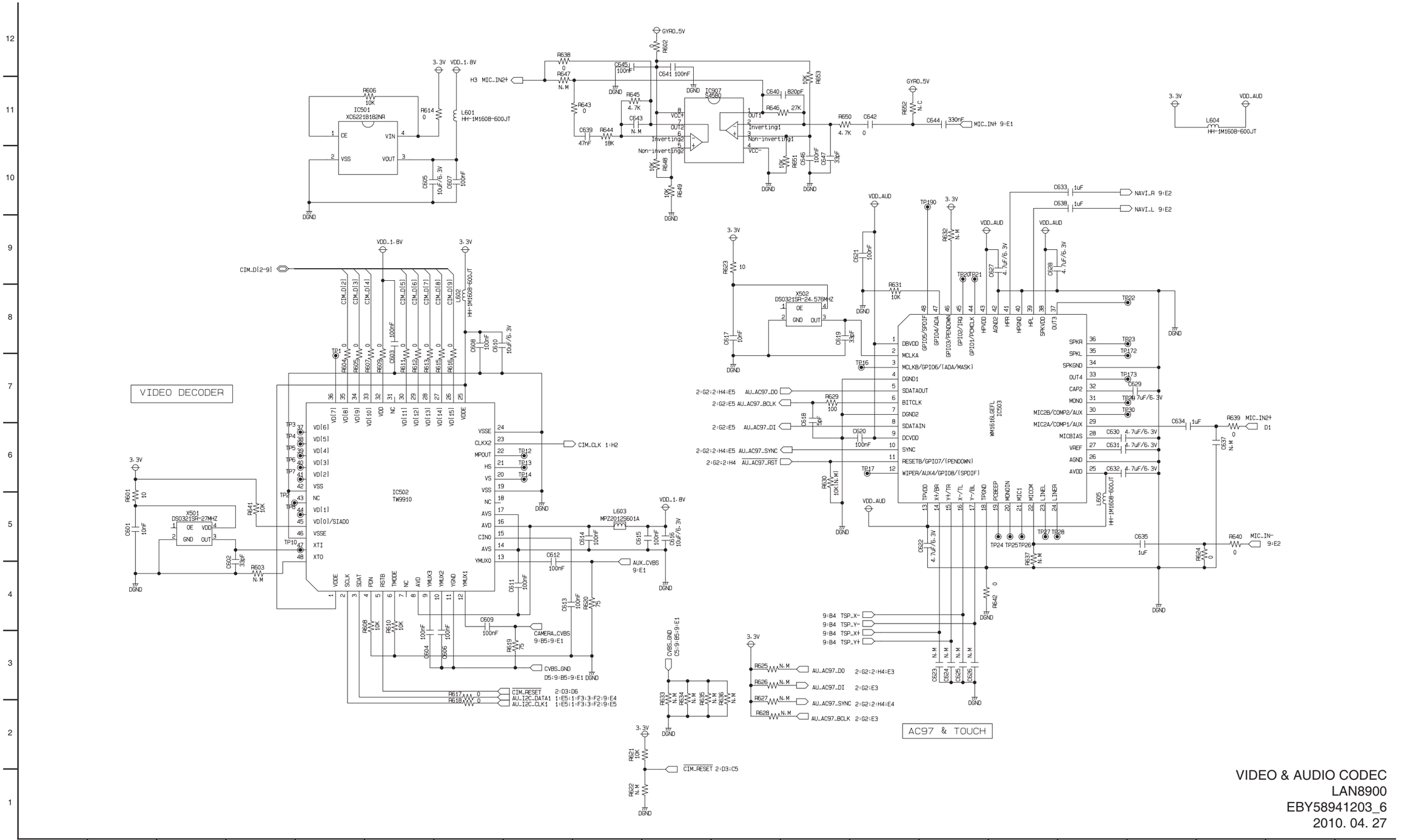


MAIN SCHEMATIC DIAGRAM (NOR FLASH & iNAND FLASH)



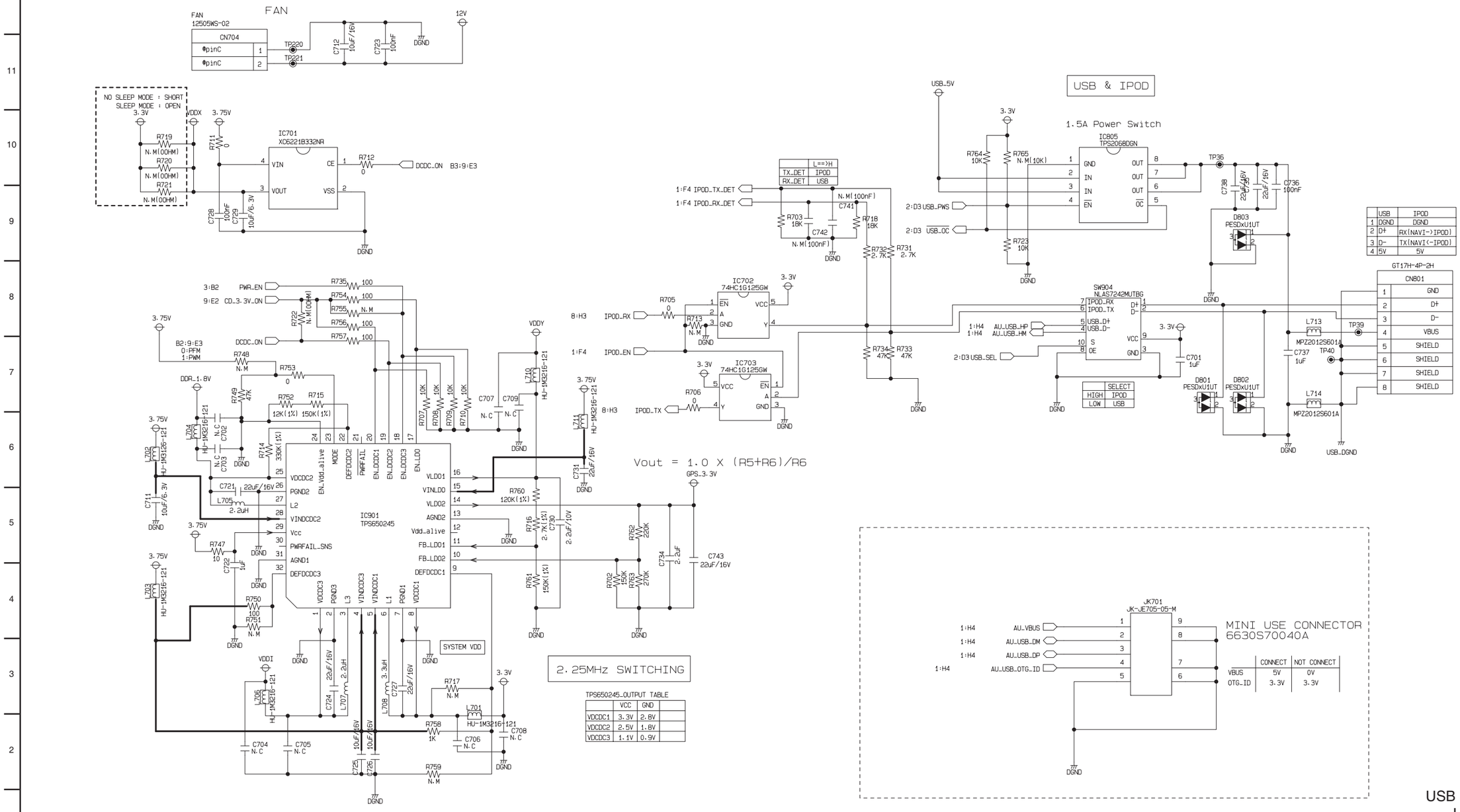
NOR FLASH & iNAND FLASH
LAN8900
EBY58941203_5
2010. 04. 27

MAIN SCHEMATIC DIAGRAM (VIDEO & AUDIO CODEC)



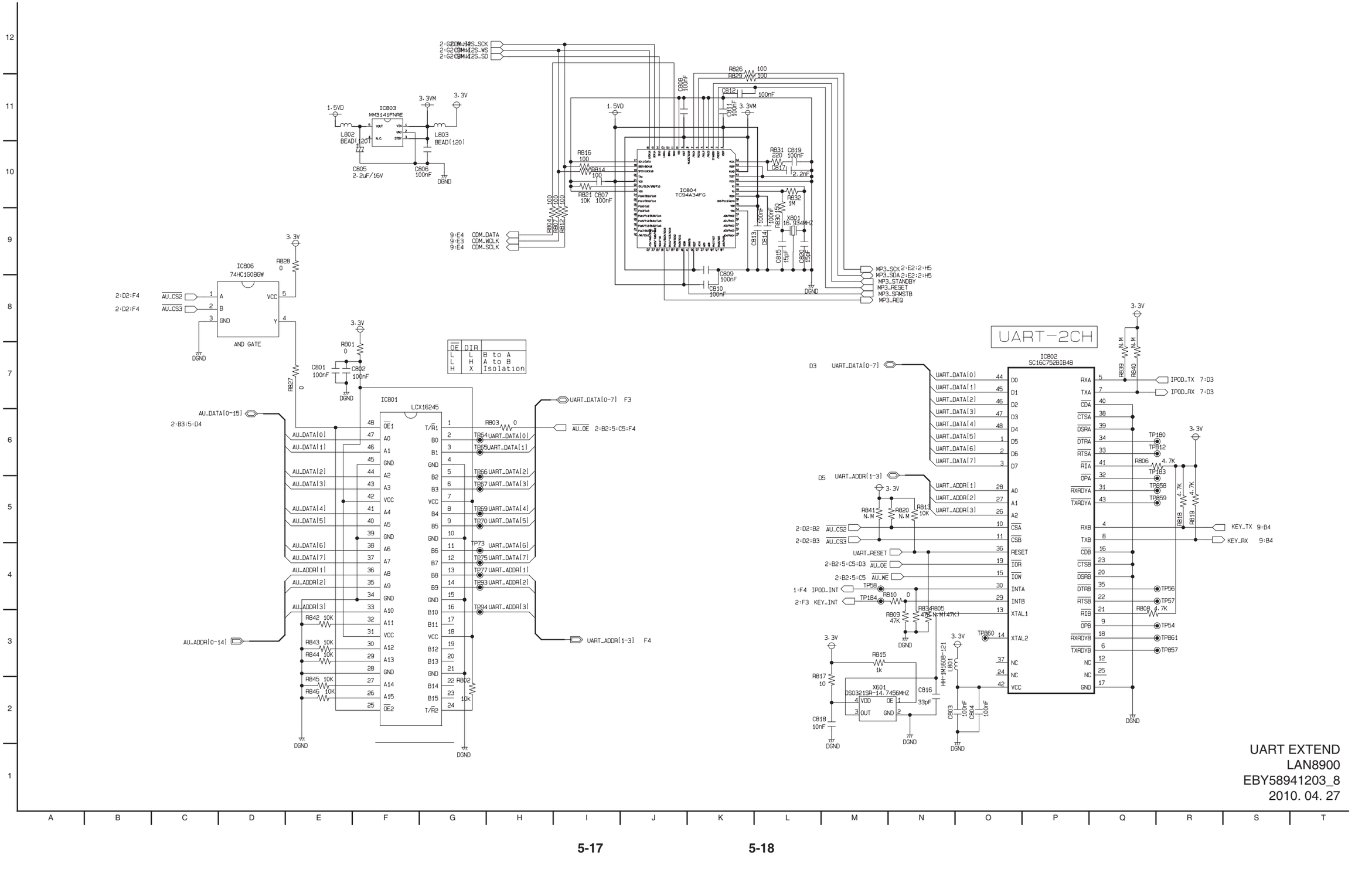
VIDEO & AUDIO CODEC
LAN8900
EBY58941203_6
2010. 04. 27

MAIN SCHEMATIC DIAGRAM (USB & PM IC)



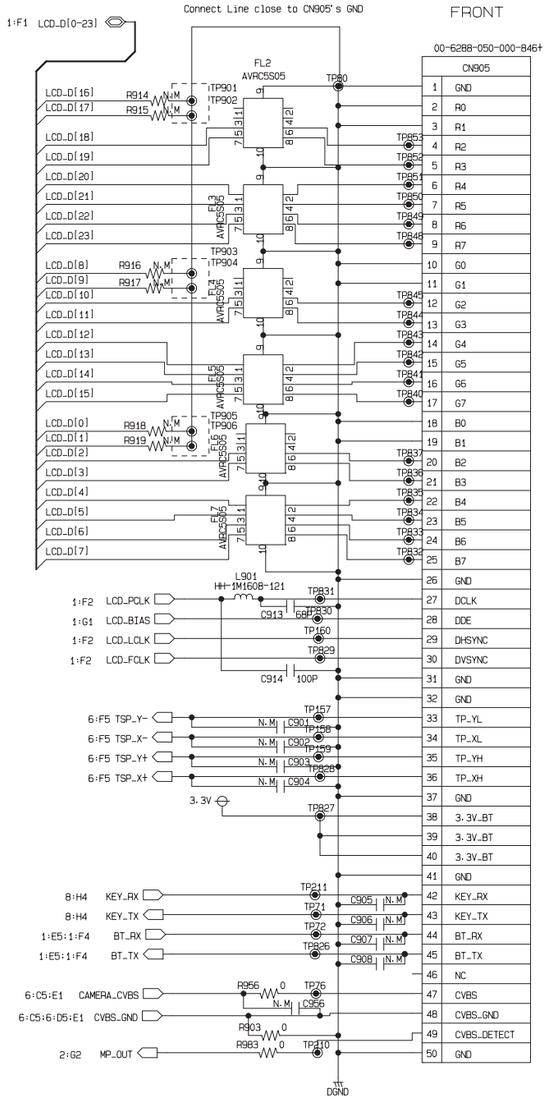
USB & PM IC
LAN8900
EBY58941203_7
2010. 04. 27

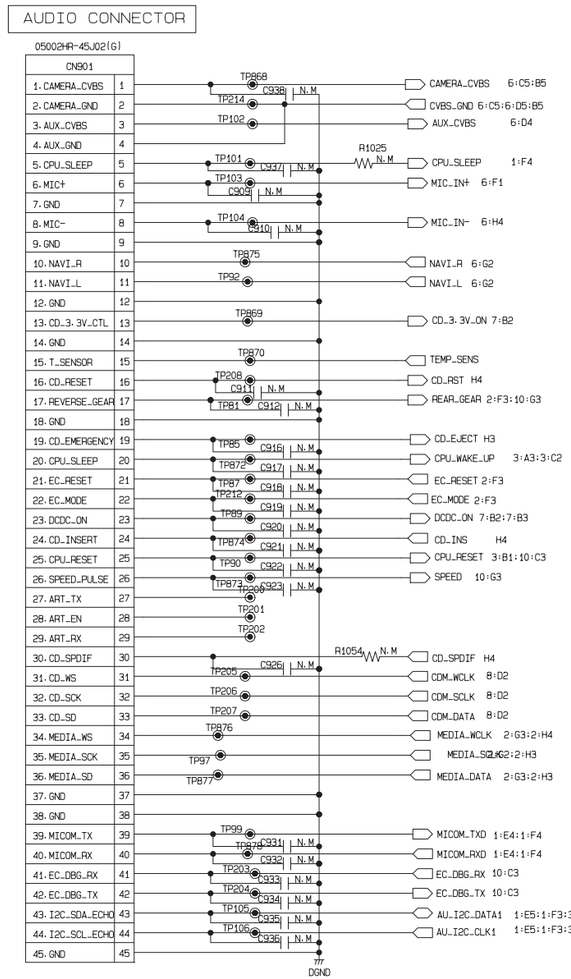
MAIN SCHEMATIC DIAGRAM (UART EXTEND)

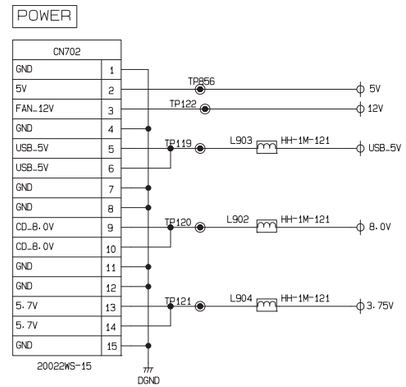


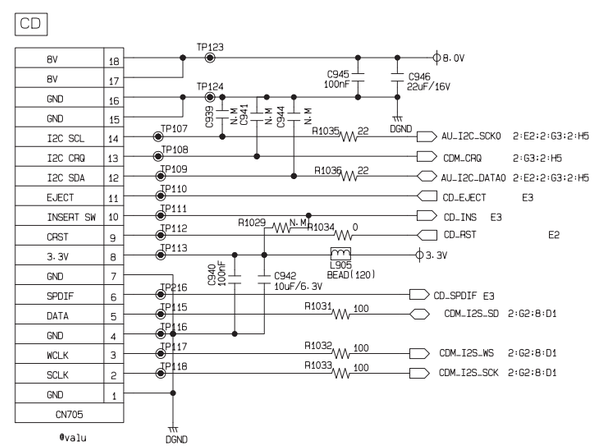
UART EXTEND
LAN8900
EBY58941203_8
2010. 04. 27

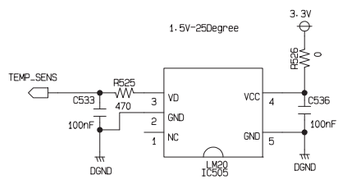
MAIN SCHEMATIC DIAGRAM (CONNECTOR)





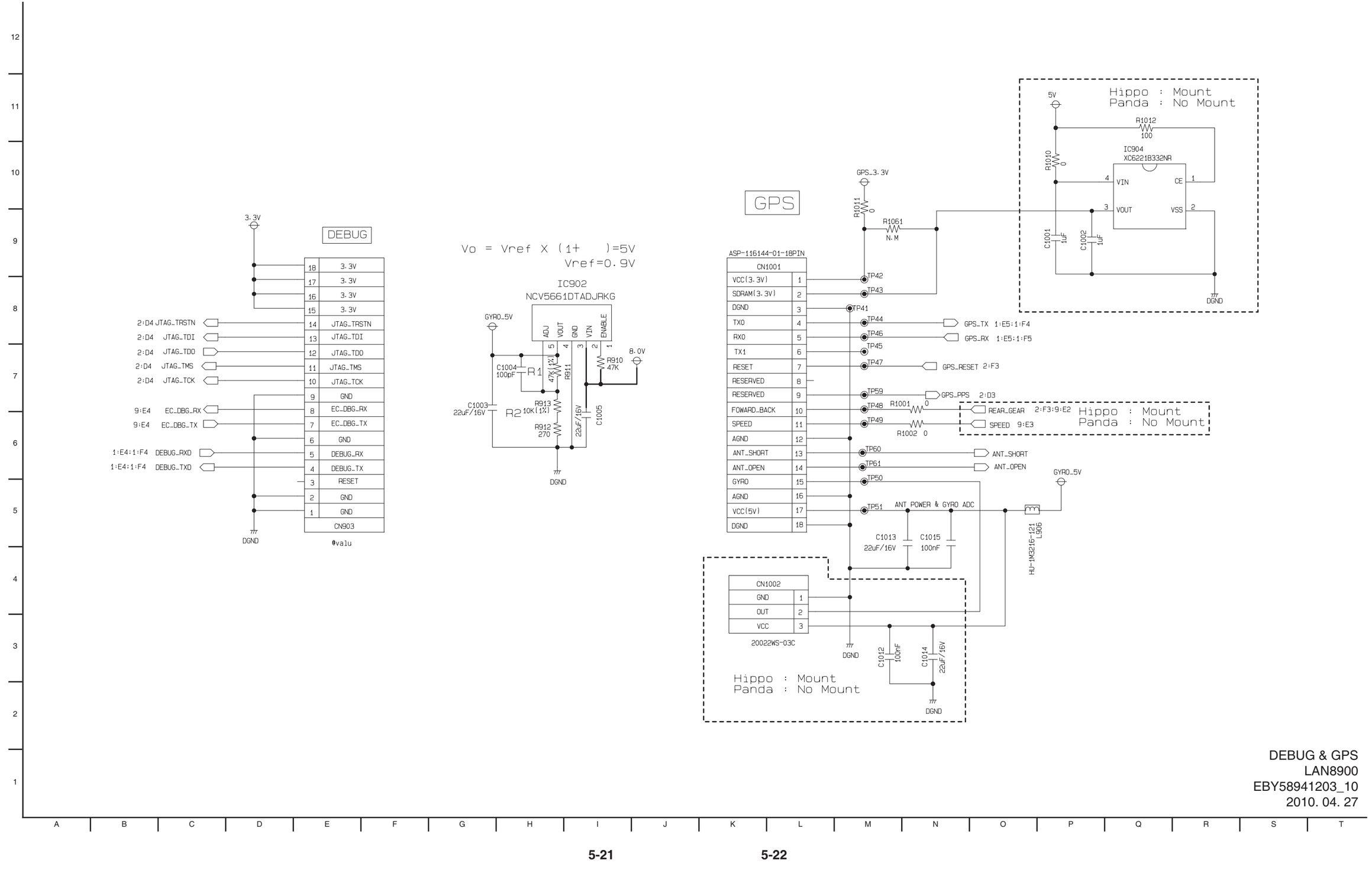






CONNECTOR
LAN8900
EBY58941203_9
2010. 04. 27

MAIN SCHEMATIC DIAGRAM (DEBUG & GPS)



DEBUG & GPS
LAN8900
EBY58941203_10
2010. 04. 27

MAIN IC VOLTAGE SHEET

PIN	VOLTAGE
IC103	
BGA	
IC301	
BGA	
IC302	
BGA	
IC403	
BGA	
IC401	
1	H(3.3 V)/L
2	H(3.3 V)/L
3	H(3.3 V)/L
4	H(3.3 V)/L
5	H(3.3 V)/L
6	H(3.3 V)/L
7	H(3.3 V)/L
8	H(3.3 V)/L
9	H(3.3 V)/L
10	H(3.3 V)/L
11	H(3.3 V)/L
12	H(3.3 V)/L
13	H(3.3 V)/L
14	H(3.3 V)/L
15	H(3.3 V)/L
16	H(3.3 V)/L
17	H(3.3 V)/L
18	H(3.3 V)/L
19	H(3.3 V)/L
20	H(3.3 V)/L
21	H(3.3 V)/L
22	H(3.3 V)/L
23	H(3.3 V)/L
24	H(3.3 V)/L
25	H(3.3 V)/L
26	H(3.3 V)/L
27	NC
28	NC
29	3.3 V
30	NC
31	H(3.3 V)/L
32	H(3.3 V)/L
33	GND
34	H(3.3 V)/L
35	H(3.3 V)/L
36	H(3.3 V)/L

PIN	VOLTAGE
37	H(3.3 V)/L
38	H(3.3 V)/L
39	H(3.3 V)/L
40	H(3.3 V)/L
41	H(3.3 V)/L
42	H(3.3 V)/L
43	3.3 V
44	H(3.3 V)/L
45	H(3.3 V)/L
46	H(3.3 V)/L
47	H(3.3 V)/L
48	H(3.3 V)/L
49	H(3.3 V)/L
50	H(3.3 V)/L
51	H(3.3 V)/L
52	GND
53	H(3.3 V)/L
54	H(3.3 V)/L
55	NC
56	NC
IC402	
1	GND
2	H(3.3 V)/L
3	H(3.3 V)/L
4	GND
5	H(3.3 V)/L
6	H(3.3 V)/L
7	3.3 V
8	H(3.3 V)/L
9	H(3.3 V)/L
10	GND
11	H(3.3 V)/L
12	H(3.3 V)/L
13	H(3.3 V)/L
14	H(3.3 V)/L
15	GND
16	H(3.3 V)/L
17	H(3.3 V)/L
18	3.3 V
19	NC
20	NC
21	GND
22	NC
23	NC
24	GND

PIN	VOLTAGE
25	H(3.3 V)/L
26	0 V
27	0 V
28	0 V
29	0 V
30	0 V
31	3.3 V
32	0 V
33	H(3.3 V)/L
34	GND
35	H(3.3 V)/L
36	H(3.3 V)/L
37	H(3.3 V)/L
38	H(3.3 V)/L
39	GND
40	H(3.3 V)/L
41	H(3.3 V)/L
42	3.3 V
43	H(3.3 V)/L
44	H(3.3 V)/L
45	GND
46	H(3.3 V)/L
47	H(3.3 V)/L
48	H(3.3 V)/L
IC502	
1	3.3V
2	H(3.3 V)/L
3	H(3.3 V)/L
4	H(3.3 V)/L
5	H(3.3 V)/L
6	H(3.3 V)/L
7	NC
8	1.8 V
9	Analog In
10	Analog In
11	GND
12	Analog In
13	Analog In
14	GND
15	GND
16	1.8 V
17	GND
18	NC
19	GND
20	H(3.3 V)/L

PIN	VOLTAGE
21	H(3.3 V)/L
22	H(3.3 V)/L
23	H(3.3 V)/L
24	GND
25	3.3 V
26	H(3.3 V)/L
27	H(3.3 V)/L
28	H(3.3 V)/L
29	H(3.3 V)/L
30	H(3.3 V)/L
31	NC
32	1.8 V
33	H(3.3 V)/L
34	H(3.3 V)/L
35	H(3.3 V)/L
36	H(3.3 V)/L
37	H(3.3 V)/L
38	H(3.3 V)/L
39	H(3.3 V)/L
40	H(3.3 V)/L
41	H(3.3 V)/L
42	GND
43	NC
44	H(3.3 V)/L
45	H(3.3 V)/L
46	GND
47	OSC_IN
48	OSC_OUT
IC503	
1	3.3 V
2	H(3.3 V)/L
3	H(3.3 V)/L
4	GND
5	H(3.3 V)/L
6	H(3.3 V)/L
7	GND
8	H(3.3 V)/L
9	3.3 V
10	H(3.3 V)/L
11	H(3.3 V)/L
12	Analog I/O
13	3.3 V
14	Analog In
15	Analog In
16	Analog In

PIN	VOLTAGE
17	Analog In
18	GND
19	Analog In
20	Analog In
21	Analog In
22	Analog In
23	Analog In
24	Analog In
25	3.3 V
26	GND
27	Analog Out
28	Analog Out
29	Analog In
30	Analog In
31	Analog Out
32	Analog I/O
33	Analog Out
34	GND
35	Analog Out
36	Analog Out
37	Analog Out
38	3.3 V
39	Analog Out
40	GND
41	Analog Out
42	GND
43	3.3 V
44	H(3.3 V)/L
45	H(3.3 V)/L
46	H(3.3 V)/L
47	H(3.3 V)/L
48	H(3.3 V)/L
IC801	
1	H(3.3 V)/L
2	H(3.3 V)/L
3	H(3.3 V)/L
4	GND
5	H(3.3 V)/L
6	H(3.3 V)/L
7	3.3 V
8	H(3.3 V)/L
9	H(3.3 V)/L
10	GND
11	H(3.3 V)/L
12	H(3.3 V)/L

PIN	VOLTAGE
13	H(3.3 V)/L
14	H(3.3 V)/L
15	GND
16	H(3.3 V)/L
17	H(3.3 V)/L
18	3.3 V
19	H(3.3 V)/L
20	H(3.3 V)/L
21	GND
22	H(3.3 V)/L
23	H(3.3 V)/L
24	H(3.3 V)/L
25	H(3.3 V)/L
26	H(3.3 V)/L
27	H(3.3 V)/L
28	GND
29	H(3.3 V)/L
30	H(3.3 V)/L
31	3.3 V
32	H(3.3 V)/L
33	H(3.3 V)/L
34	GND
35	H(3.3 V)/L
36	H(3.3 V)/L
37	H(3.3 V)/L
38	H(3.3 V)/L
39	GND
40	H(3.3 V)/L
41	H(3.3 V)/L
42	3.3 V
43	H(3.3 V)/L
44	H(3.3 V)/L
45	GND
46	H(3.3 V)/L
47	H(3.3 V)/L
48	H(3.3 V)/L
IC802	
1	H(3.3 V)/L
2	H(3.3 V)/L
3	H(3.3 V)/L
4	H(3.3 V)/L
5	H(3.3 V)/L
6	H(3.3 V)/L
7	H(3.3 V)/L
8	H(3.3 V)/L

PIN	VOLTAGE
9	H(3.3 V)/L
10	H(3.3 V)/L
11	H(3.3 V)/L
12	H(3.3 V)/L
13	OSC_IN
14	OSC_OUT
15	H(3.3 V)/L
16	H(3.3 V)/L
17	GND
18	H(3.3 V)/L
19	H(3.3 V)/L
20	H(3.3 V)/L
21	H(3.3 V)/L
22	H(3.3 V)/L
23	H(3.3 V)/L
24	H(3.3 V)/L
25	H(3.3 V)/L
26	H(3.3 V)/L
27	H(3.3 V)/L
28	H(3.3 V)/L
29	H(3.3 V)/L
30	H(3.3 V)/L
31	H(3.3 V)/L
32	H(3.3 V)/L
33	H(3.3 V)/L
34	H(3.3 V)/L
35	H(3.3 V)/L
36	H(3.3 V)/L
37	H(3.3 V)/L
38	H(3.3 V)/L
39	H(3.3 V)/L
40	H(3.3 V)/L
41	H(3.3 V)/L
42	3.3 V
43	H(3.3 V)/L
44	H(3.3 V)/L
45	H(3.3 V)/L
46	H(3.3 V)/L
47	H(3.3 V)/L
48	H(3.3 V)/L
IC804	
1	1.5 V
2	H(3.3 V)/L
3	H(3.3 V)/L
4	GND

PIN	VOLTAGE
5	GND
6	H(3.3 V)/L
7	H(3.3 V)/L
8	H(3.3 V)/L
9	NC
10	GND
11	H(3.3 V)/L
12	NC
13	NC
14	H(3.3 V)/L
15	H(3.3 V)/L
16	H(3.3 V)/L
17	GND
18	H(3.3 V)/L
19	H(3.3 V)/L
20	NC
21	1.5 V
22	0 V
23	GND
24	NC
25	NC
26	NC
27	NC
28	NC
29	NC
30	NC
31	NC
32	NC
33	NC
34	NC
35	NC
36	H(3.3 V)/L
37	NC
38	NC
39	NC
40	1.5 V
41	H(3.3 V)/L
42	3.3 V
43	NC
44	NC
45	NC
46	NC
47	NC
48	NC
49	NC

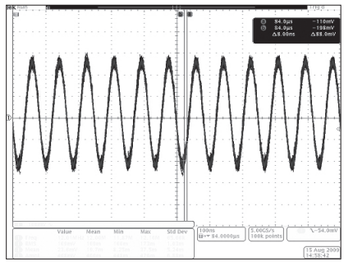
PIN	VOLTAGE
50	NC
51	NC
52	NC
53	NC
54	GND
55	1.5 V
56	NC
57	1.5 V
58	OSC_IN
59	OSC_OUT
60	GND
61	GND
62	3.3 V
63	GND
64	H(3.3 V)/L
IC805	
1	GND
2	5 V
3	5 V
4	GND
5	3.3 V
6	5 V
7	5 V
8	5 V
IC901	
1	1.1 V
2	GND
3	1.1 V
4	3.75 V
5	3.75 V
6	3.3 V
7	GND
8	3.3 V
9	3.3 V
10	1.0 V
11	1.0 V
12	NC
13	GND
14	3.3 V
15	3.75 V
16	1.8 V
17	2.8 V
18	3.3 V
19	3.0 V
20	2.8 V

PIN	VOLTAGE
21	NC
22	0.7 V
23	0 V
24	0 V
25	1.8 V
26	GND
27	1.8 V
28	3.75 V
29	3.75 V
30	NC
31	GND
32	3.5 V
IC907	
1	Analog Out
2	Analog In
3	Analog In
4	GND
5	Analog In
6	Analog In
7	Analog Out
8	5 V

MAIN WAVEFORMS

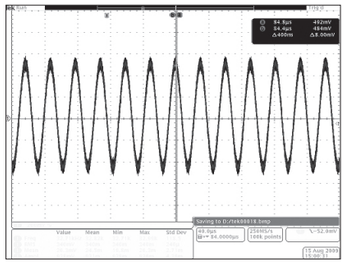
1. CPU (IC103) CLOCK

1.



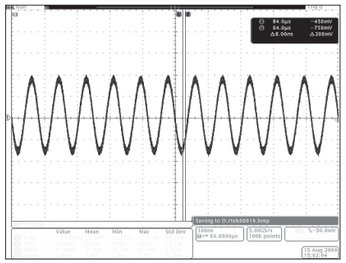
X101 pin1 (12 MHz)

2.



X102 pin1 (32.768 kHz)

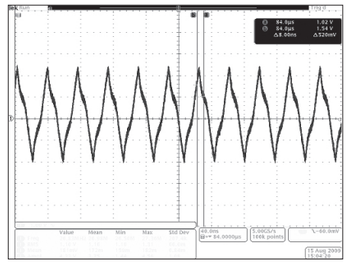
3.



X103 pin1 (12 MHz)

2. VIDEO DECODER CLOCK

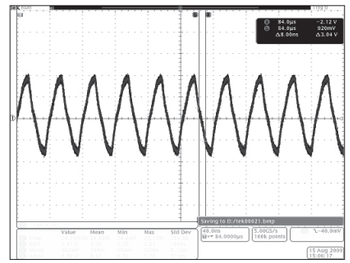
1.



X501 pin3 (27 MHz)

3. AC97 & TOUCH CLOCK

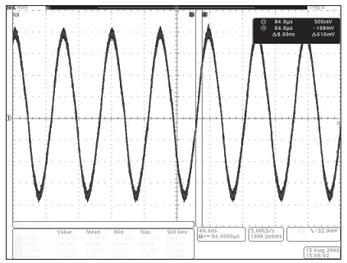
1.



X502 pin3 (24.576 MHz)

4. MP3 DECODER CLOCK

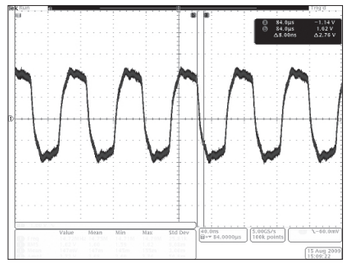
1.



X801 pin1 (16.934 MHz)

5. UART (2CH) CLOCK

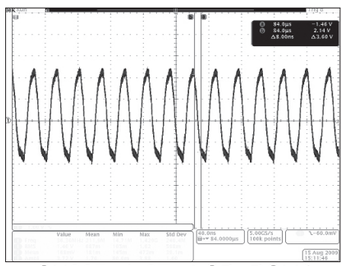
1.



X601 pin3 (14.745 MHz)

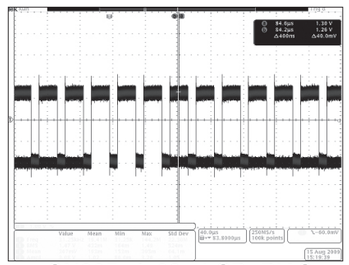
6. CPU LCD CONTROLLER CLOCK

1.



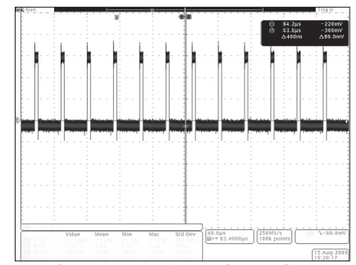
CN905 pin27 : LCD_PCLK
(Pixel Clock)

2.



CN905 pin28 : LCD_BIAS
(Bias Clock)

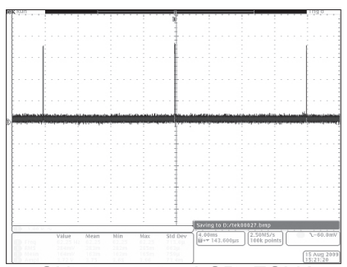
3.



CN905 pin29 : LCD_LCLK
(Line Clock)

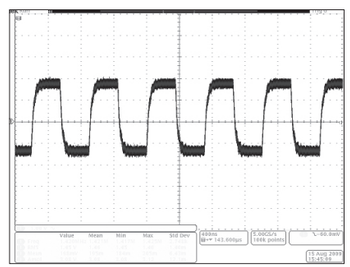
7. CD DECK I²S LINE

4.



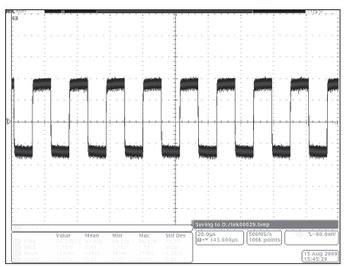
CN905 pin30 : LCD_FCLK
(Frame Clock)

1.



CN705 pin2 (Clock)

2.



CN705 pin3 (Word select)

MAIN CONNECTOR PIN DESCRIPTION

PIN	NAME
CN301	
1	GND
2	D+
3	D-
4	VBUS(5 V)
CN702	
1	GND
2	5 V
3	FAN_12 V
4	GND
5	USB_5 V
6	USB_5 V
7	GND
8	GND
9	CD_8.0 V
10	CD_8.0 V
11	GND
12	GND
13	3.75 V
14	3.75 V
15	GND
CN705	
1	GND
2	SCLK
3	WCLK
4	GND
5	DATA
6	SPDIF
7	GND
8	3.3 V
9	CRST
10	INSERT SW
11	EJECT
12	I2C SDA
13	I2C CRQ
14	I2C SCL
15	GND
16	GND
17	8 V
18	8 V
CN901	
1	CAMERA_CVBS
2	CAMERA_GND
3	AUX_CVBS
4	AUX_GND

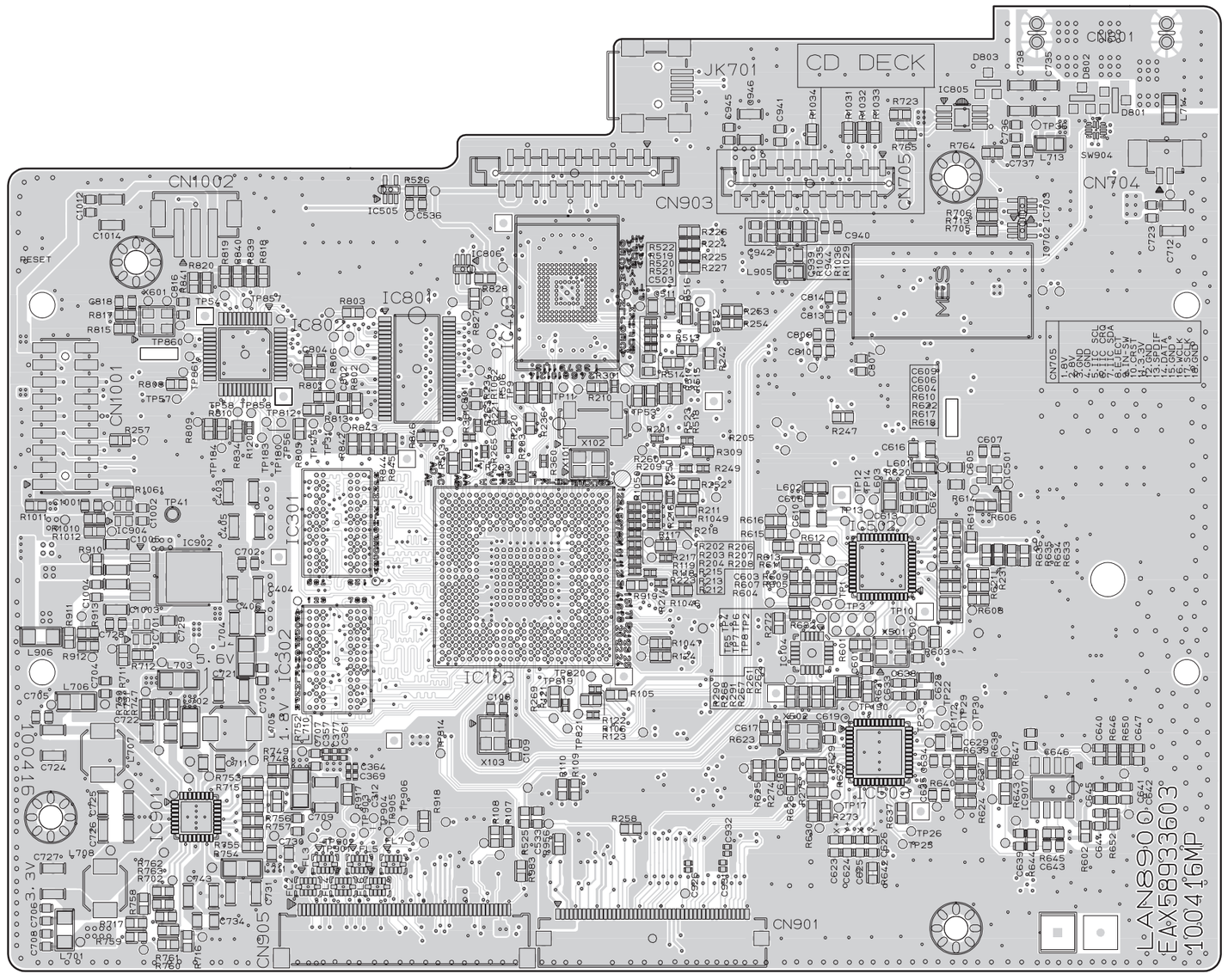
PIN	NAME
5	GND
6	MIC+
7	GND
8	MIC-
9	GND
10	NAVI_R
11	NAVI_L
12	GND
13	CD_3.3 V_CTL
14	GND
15	T_SENSOR
16	CD_RESET
17	REVERSE_GEAR
18	GND
19	CD_EMERGENCY
20	CPU_SLEEP
21	EC_RESET
22	EC_MODE
23	DCDC_ON
24	CD_INSERT
25	CPU_RESET
26	SPEED_PULSE
27	ART_TX
28	ART_EN
29	ART_RX
30	CD_SPDIF
31	CD_WS
32	CD_SCK
33	CD_SD
34	MEDIA_WS
35	MEDIA_SCK
36	MEDIA_SD
37	GND
38	GND
39	MICOM_TX
40	MICOM_RX
41	EC_DBG_RX
42	EC_DBG_TX
43	I2C_SDA_ECHO
44	I2C_SCL_ECHO
45	GND
CN905	
1	GND
2	R0
3	R1

PIN	NAME
4	R2
5	R3
6	R4
7	R5
8	R6
9	R7
10	G0
11	G1
12	G2
13	G3
14	G4
15	G5
16	G6
17	G7
18	B0
19	B1
20	B2
21	B3
22	B4
23	B5
24	B6
25	B7
26	GND
27	DCLK
28	DDE
29	DHSYNC
30	DVSYNC
31	GND
32	GND
33	TP_YL
34	TP_XL
35	TP_YH
36	TP_XH
37	GND
38	3.3 V_BT
39	3.3 V_BT
40	3.3 V_BT
41	GND
42	KEY_RX
43	KEY_TX
44	BT_RX
45	BT_TX
46	NC
47	CVBS
48	CVBS_GND

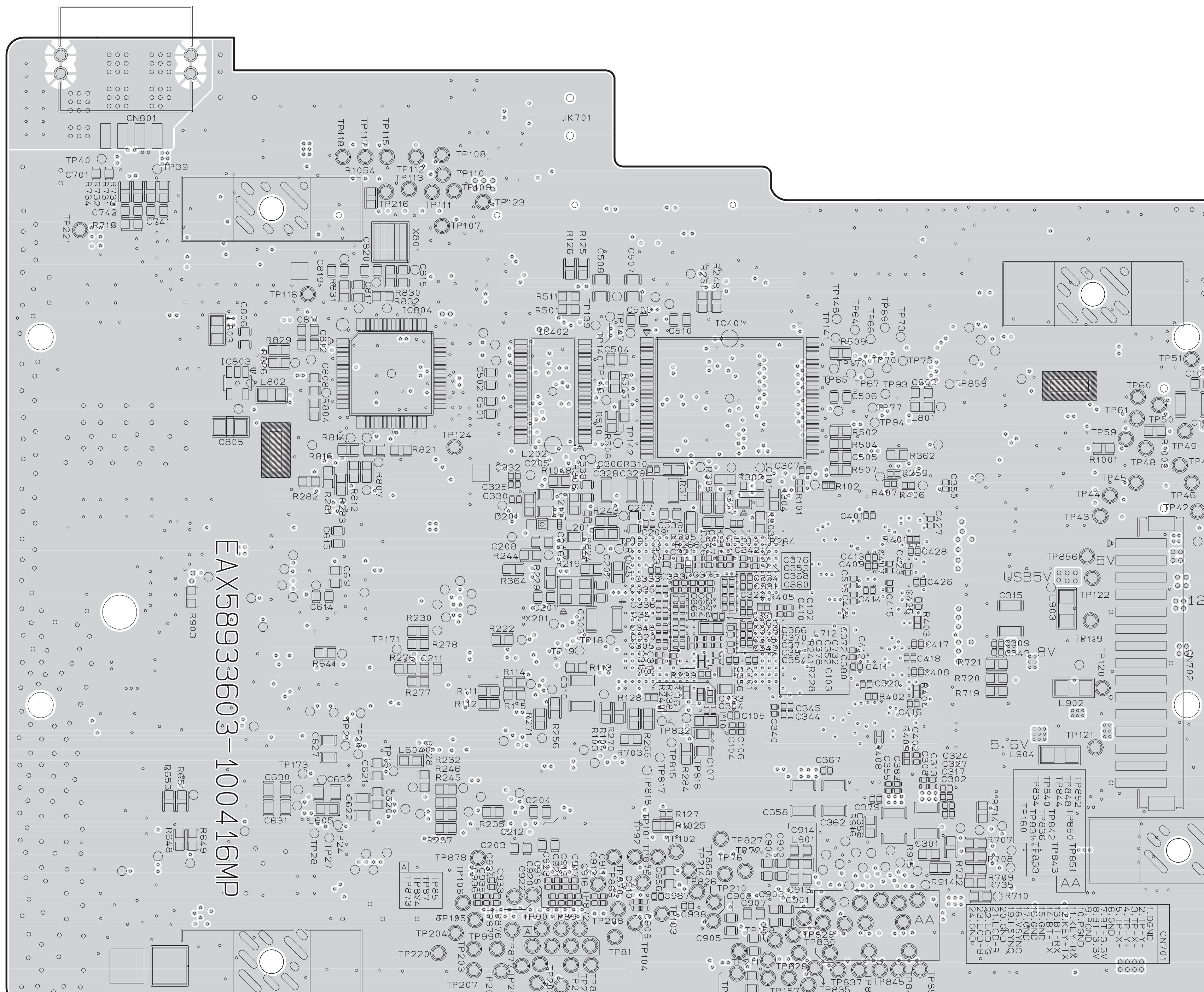
PIN	NAME
49	CVBS_DETECT
50	GND
CN1001	
1	VCC(3.3 V)
2	SDRAM(3.3 V)
3	DGND
4	TX0
5	RX0
6	TX1
7	RESET
8	RESERVED
9	RESERVED
10	FORWARD_BACK
11	SPEED
12	AGND
13	ANT_SHORT
14	ANT_OPEN
15	GYRO
16	AGND
17	VCC(5 V)
18	DGND
JK701	
1	VCC
2	D-
3	D+
4	NC
5	GND

MEMO

MAIN PRINTED CIRCUIT BOARD (TOP VIEW)



MAIN PRINTED CIRCUIT BOARD (BOTTOM VIEW)



SECTION 6. AUDIO PART

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• AUDIO PRINTED CIRCUIT BOARD (TOP VIEW) 6-21
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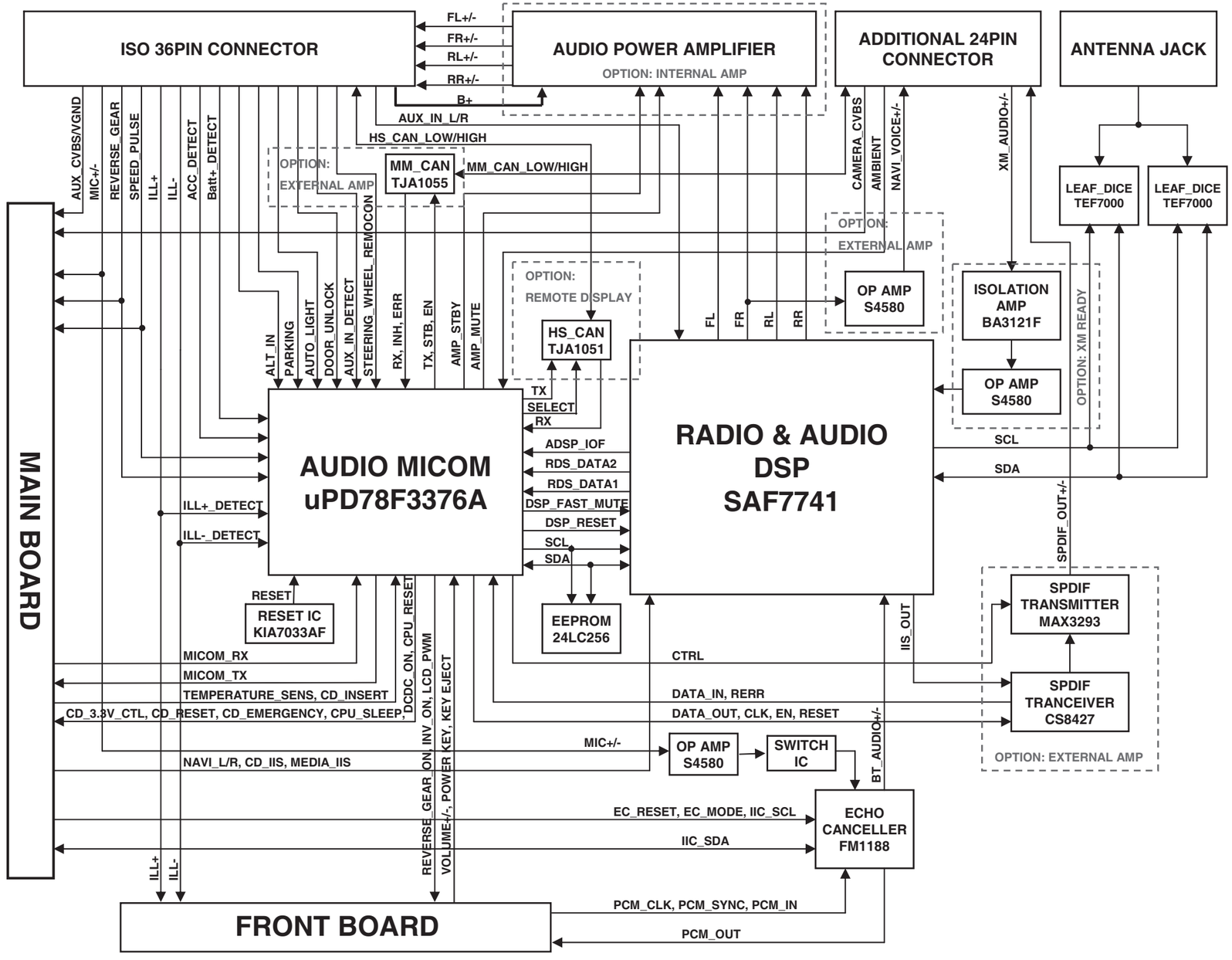
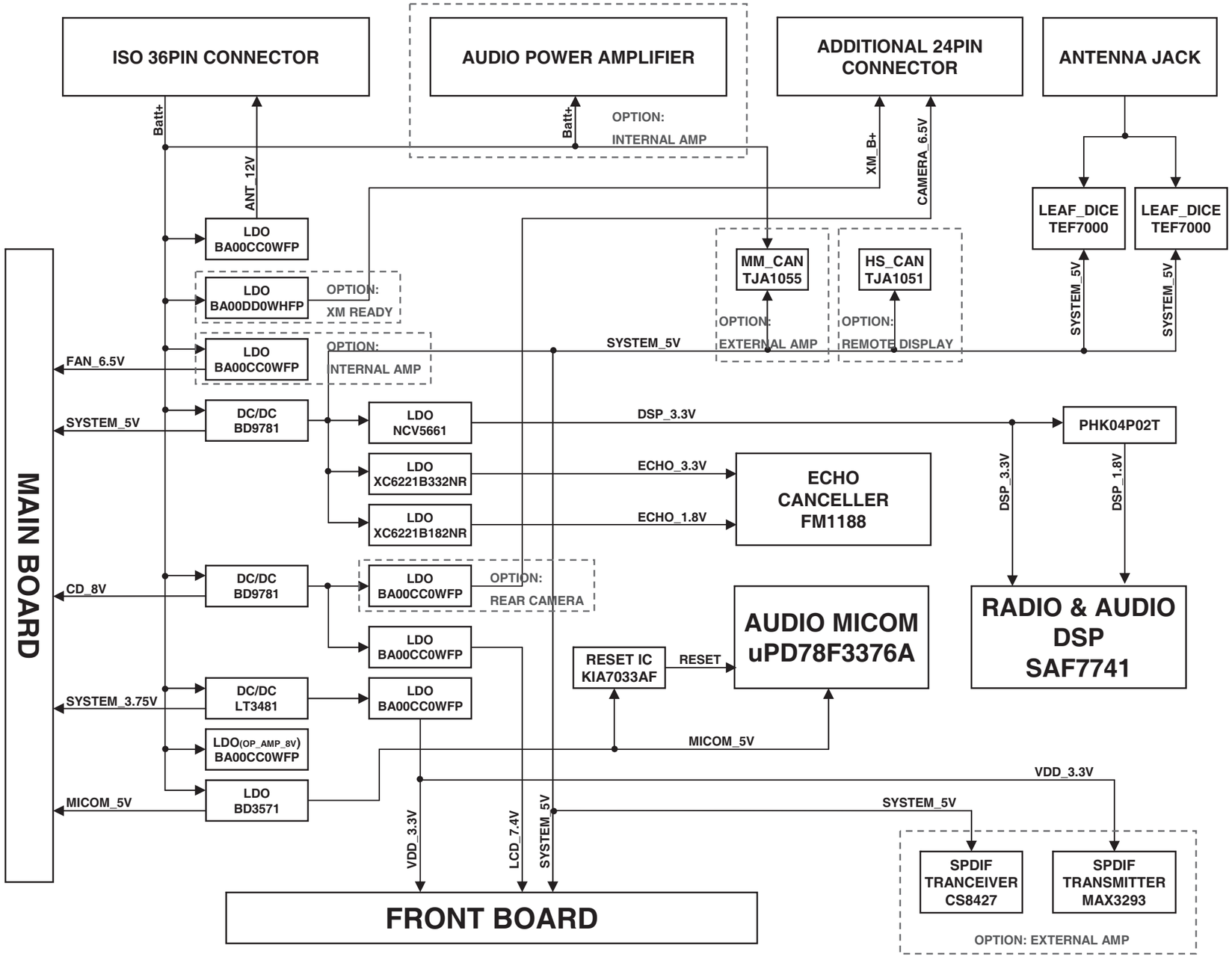
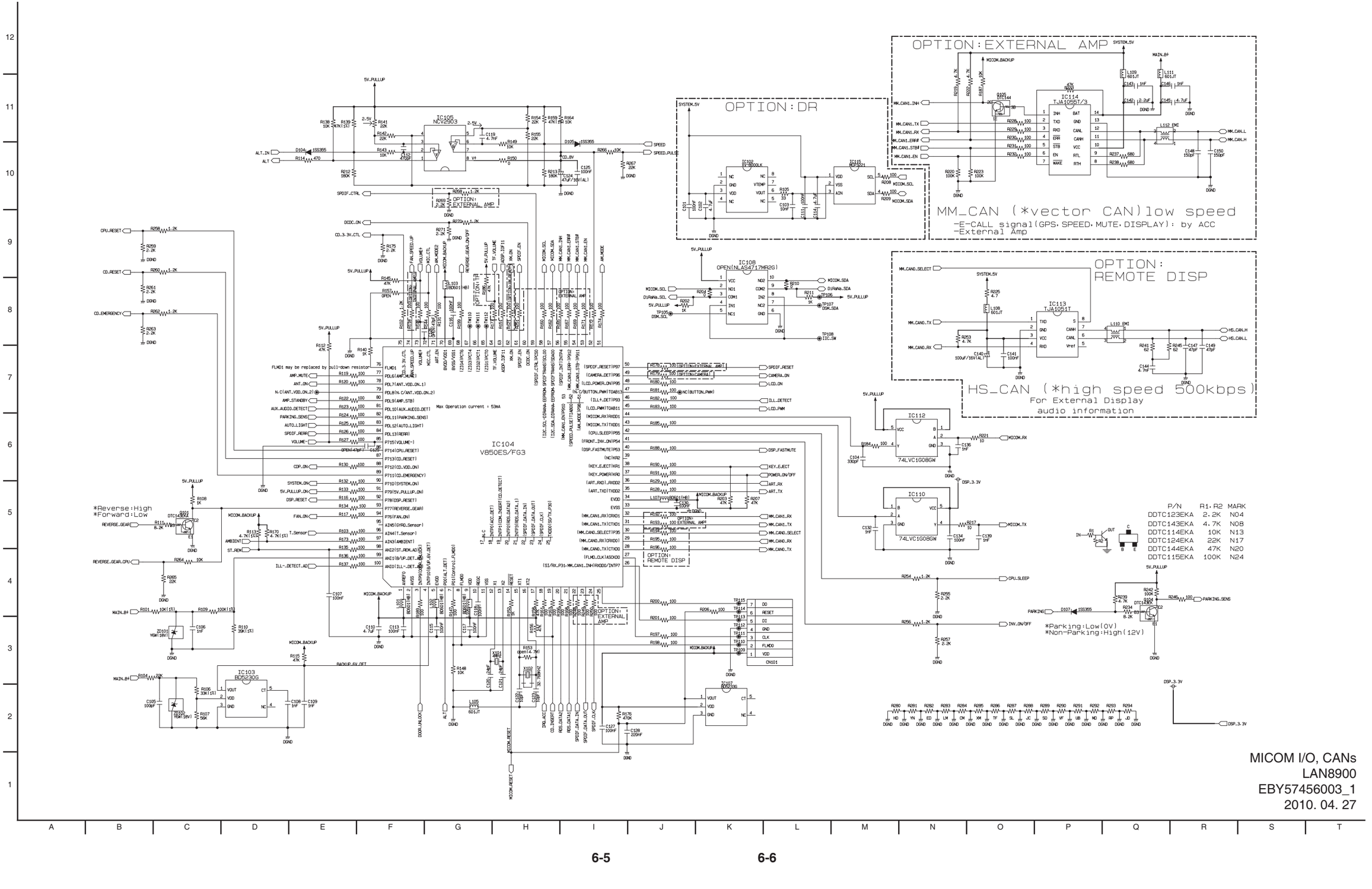
AUDIO BLOCK DIAGRAM



POWER BLOCK DIAGRAM

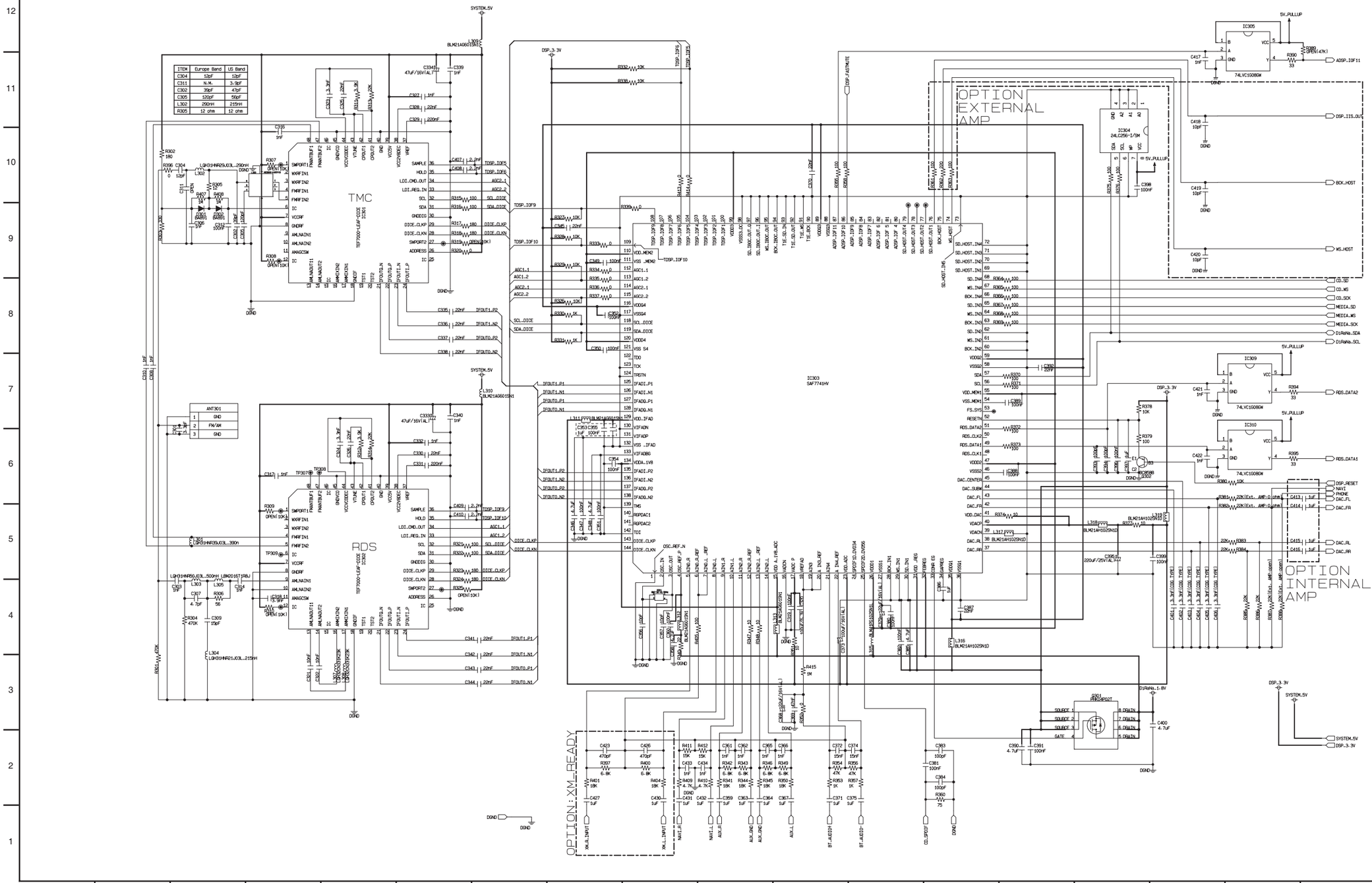


AUDIO SCHEMATIC DIAGRAM (MICOM I/O, CANs)

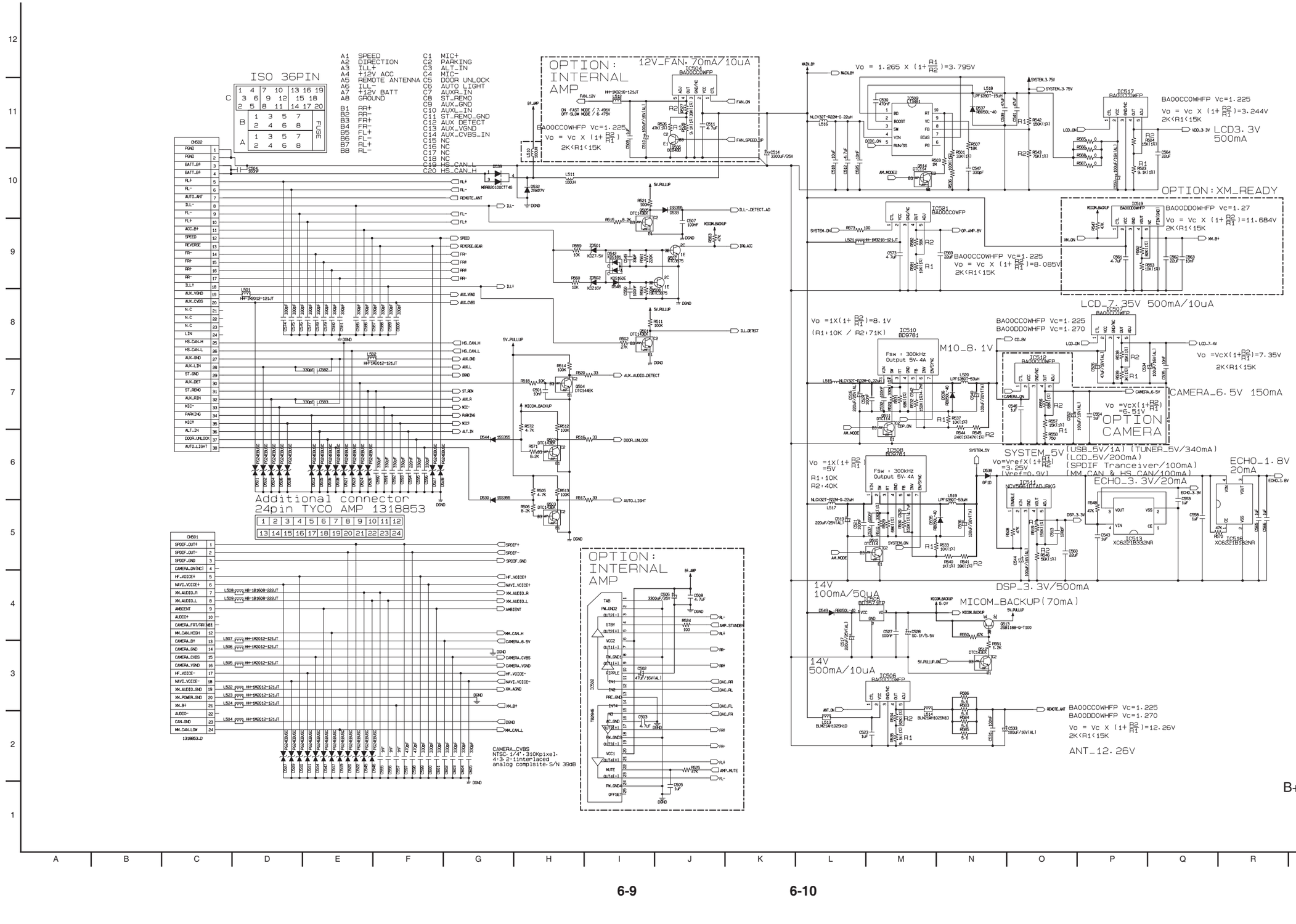


MICOM I/O, CANs
LAN8900
EBY57456003_1
2010. 04. 27

AUDIO SCHEMATIC DIAGRAM (TUNER, DSP)

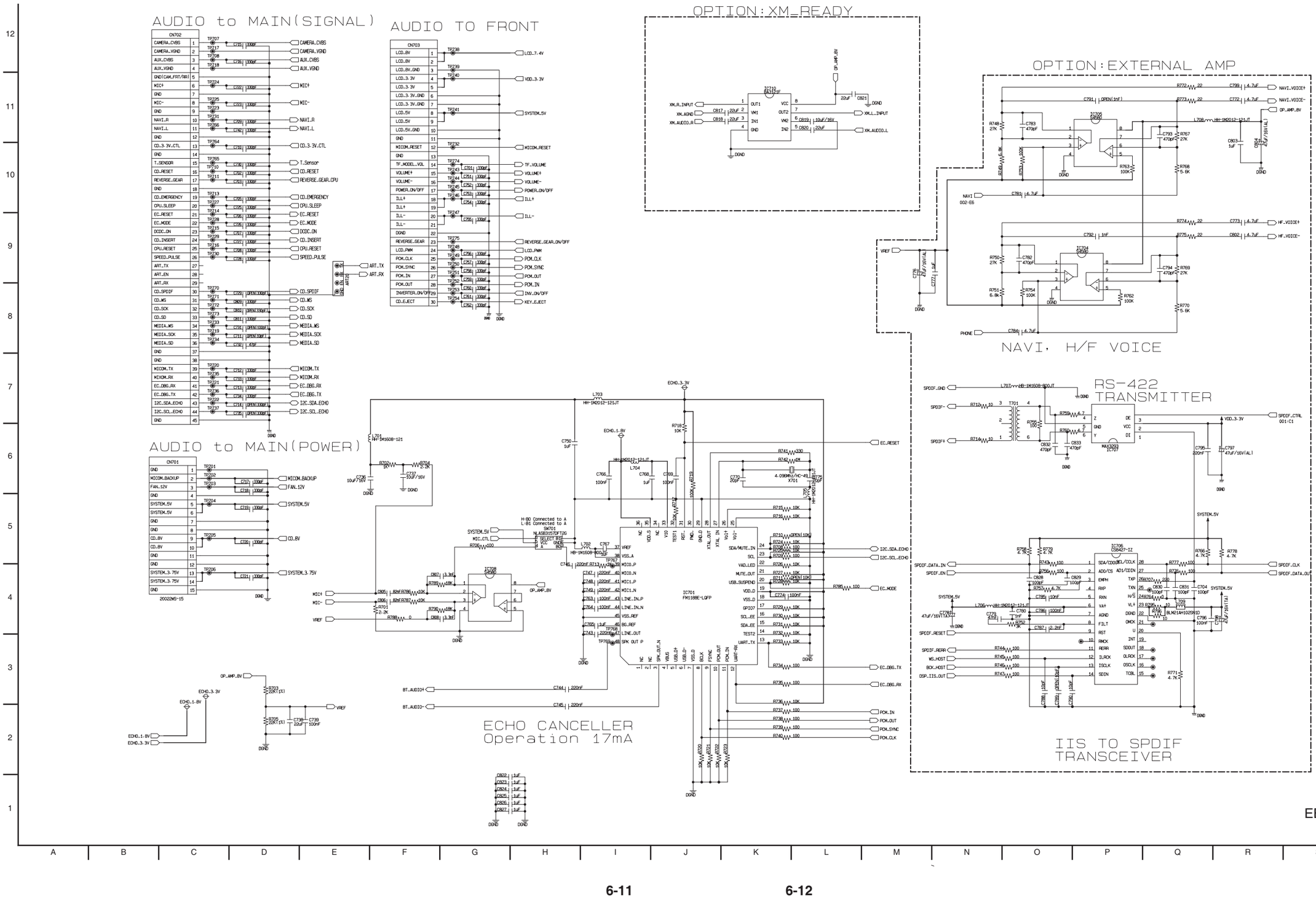


AUDIO SCHEMATIC DIAGRAM (B+, VDD, TERMINAL)



B+, VDD, TERMINAL
LAN8900
EBY57456003_3
2010. 04. 27

AUDIO SCHEMATIC DIAGRAM (TERMINAL)



AUDIO IC/CONNECTOR VOLTAGE SHEET

PIN	VOLTAGE
IC103	
1	H(5 V)/L
2	(Batt +)* 0.5
3	GND
4	NC
5	NC
IC104	
1	5 V
2	GND
3	H(5 V)/L
4	H(5 V)/L
5	5 V
6	H(5 V)/L
7	H(5 V)/L
8	FLMD0
9	5 V
10	GND
11	GND
12	X1
13	X2
14	H(5 V)/L
15	XT1
16	XT2
17	5 V
18	H(5 V)/L
19	H(5 V)/L
20	H(5 V)/L
21	H(5 V)/L
22	H(5 V)/L
23	H(5 V)/L
24	H(5 V)/L
25	H(5 V)/L
26	H(5 V)/L
27	H(5 V)/L
28	H(5 V)/L
29	H(5 V)/L
30	H(5 V)/L
31	H(5 V)/L
32	H(5 V)/L
33	GND
34	5 V
35	H(5 V)/L
36	H(5 V)/L
37	H(5 V)/L
38	H(5 V)/L

PIN	VOLTAGE
39	H(5 V)/L
40	H(5 V)/L
41	H(5 V)/L
42	H(5 V)/L
43	H(5 V)/L
44	H(5 V)/L
45	H(5 V)/L
46	H(5 V)/L
47	NC
48	H(5 V)/L
49	H(5 V)/L
50	H(5 V)/L
51	H(5 V)/L
52	H(5 V)/L
53	H(5 V)/L
54	H(5 V)/L
55	H(5 V)/L
56	H(5 V)/L
57	H(5 V)/L
58	H(5 V)/L
59	H(5 V)/L
60	H(5 V)/L
61	H(5 V)/L
62	H(5 V)/L
63	H(5 V)/L
64	H(5 V)/L
65	NC
66	NC
67	NC
68	H(5 V)/L
69	GND
70	5 V
71	H(5 V)/L
72	H(5 V)/L
73	H(5 V)/L
74	H(5 V)/L
75	H(5 V)/L
76	FLMD1
77	H(5 V)/L
78	H(5 V)/L
79	NC
80	H(5 V)/L
81	H(5 V)/L
82	H(5 V)/L
83	H(5 V)/L

PIN	VOLTAGE
84	H(5 V)/L
85	H(5 V)/L
86	H(5 V)/L
87	H(5 V)/L
88	H(5 V)/L
89	H(5 V)/L
90	H(5 V)/L
91	H(5 V)/L
92	H(5 V)/L
93	H(5 V)/L
94	H(5 V)/L
95	NC
96	AD(0~5 V)
97	AD(0~5 V)
98	AD(0~5 V)
99	AD(0~5 V)
100	AD(0~5 V)
IC113 (Option: Remote Display)	
1	H(5 V)/L
2	GND
3	5 V
4	H(5 V)/L
5	NC
6	H(Batt +)/L
7	H(Batt +)/L
8	H(5 V)/L
IC114 (Option:External AMP)	
1	H(Batt +)/L
2	H(5 V)/L
3	H(5 V)/L
4	H(5 V)/L
5	H(5 V)/L
6	H(5 V)/L
7	Batt +
8	H(Batt +)/L
9	H(Batt +)/L
10	5 V
11	H(Batt +)/L
12	H(Batt +)/L
13	GND
14	Batt +
IC301	
1	NC

PIN	VOLTAGE
2	NC
3	NC
4	FMRF_IN1
5	FMRF_IN2
6	AD(0~5 V)
7	5 V
8	GND
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC
17	NC
18	GND
19	NC
20	NC
21	ANALOG OUT
22	ANALOG OUT
23	ANALOG OUT
24	ANALOG OUT
25	NC
26	5 V
27	NC
28	HIGH(3.3 V)/L
29	HIGH(3.3 V)/L
30	GND
31	HIGH(3.3 V)/L
32	HIGH(3.3 V)/L
33	HIGH(3.3 V)/L
34	HIGH(3.3 V)/L
35	HIGH(3.3 V)/L
36	HIGH(3.3 V)/L
37	0 V
38	0 V
39	5 V
40	GND
41	HIGH(3.3 V)/L
42	HIGH(3.3 V)/L
43	HIGH(3.3 V)/L
44	HIGH(3.3 V)/L
45	GND
46	NC

PIN	VOLTAGE
47	ANALOG OUT
48	ANALOG OUT
IC302	
1	NC
2	NC
3	NC
4	FMRF_IN1
5	FMRF_IN2
6	NC
7	5 V
8	GND
9	AMRF_IN
10	GND
11	0 V
12	NC
13	ANALOG OUT
14	ANALOG OUT
15	NC
16	ANALOG IN
17	ANALOG IN
18	GND
19	NC
20	NC
21	ANALOG OUT
22	ANALOG OUT
23	ANALOG OUT
24	ANALOG OUT
25	NC
26	GND
27	NC
28	HIGH(3.3 V)/L
29	HIGH(3.3 V)/L
30	GND
31	HIGH(3.3 V)/L
32	HIGH(3.3 V)/L
33	HIGH(3.3 V)/L
34	HIGH(3.3 V)/L
35	HIGH(3.3 V)/L
36	HIGH(3.3 V)/L
37	0 V
38	0 V
39	5 V
40	GND
41	HIGH(3.3 V)/L
42	HIGH(3.3 V)/L

PIN	VOLTAGE
43	HIGH(3.3 V)/L
44	HIGH(3.3 V)/L
45	GND
46	NC
47	NC
48	NC
IC303	
1	GND
2	OSC_IN
3	OSC_OUT
4	1.8 V
5	ANALOG IN
6	ANALOG IN
7	ANALOG IN
8	ANALOG IN
9	ANALOG IN
10	ANALOG IN
11	ANALOG IN
12	ANALOG IN
13	ANALOG IN
14	ANALOG IN
15	1.8 V
16	GND
17	3.3 V
18	1.6
19	1.6
20	1.6
21	ANALOG IN
22	ANALOG IN
23	3.3 V
24	NC
25	NC
26	1.8 V
27	GND
28	GND
29	GND
30	GND
31	3.3 V
32	1.8 V
33	2.4 V
34	1.2 V
35	3.3 V
36	GND
37	ANALOG OUT
38	ANALOG OUT

PIN	VOLTAGE
39	GND
40	3.3 V
41	3.3 V
42	ANALOG OUT
43	ANALOG OUT
44	NC
45	NC
46	GND
47	1.8 V
48	NC
49	H(3.3 V)/L
50	NC
51	H(3.3 V)/L
52	H(3.3 V)/L
53	NC
54	GND
55	1.8 V
56	H(5 V)/L
57	H(5 V)/L
58	GND
59	3.3 V
60	GND
61	GND
62	GND
63	H(3.3 V)/L
64	H(3.3 V)/L
65	H(3.3 V)/L
66	H(3.3 V)/L
67	H(3.3 V)/L
68	H(3.3 V)/L
69	GND
70	GND
71	GND
72	GND
73	GND
74	H(3.3 V)/L
75	H(3.3 V)/L
76	H(3.3 V)/L
77	NC
78	NC
79	NC
80	NC
81	NC
82	NC
83	NC

PIN	VOLTAGE
84	NC
85	NC
86	H(5 V)/L
87	H(3.3 V)/L
88	GND
89	3.3 V
90	GND
91	GND
92	GND
93	GND
94	GND
95	GND
96	GND
97	GND
98	GND
99	1.8 V
100	NC
101	NC
102	NC
103	NC
104	HIGH(3.3 V)/L
105	HIGH(3.3 V)/L
106	NC
107	NC
108	HIGH(3.3 V)/L
109	HIGH(3.3 V)/L
110	1.8 V
111	GND
112	HIGH(3.3 V)/L
113	HIGH(3.3 V)/L
114	HIGH(3.3 V)/L
115	HIGH(3.3 V)/L
116	3.3 V
117	GND
118	HIGH(3.3 V)/L
119	HIGH(3.3 V)/L
120	1.8 V
121	GND
122	NC
123	GND
124	GND
125	ANALOG IN
126	ANALOG IN
127	ANALOG IN
128	ANALOG IN

PIN	VOLTAGE
129	3.3 V
130	GND
131	3 V
132	GND
133	1.2 V
134	1.8 V
135	ANALOG IN
136	ANALOG IN
137	ANALOG IN
138	ANALOG IN
139	GND
140	NC
141	NC
142	GND
143	HIGH(3.3 V)/L
144	HIGH(3.3 V)/L
IC304	
1	GND
2	GND
3	GND
4	GND
5	H(5 V)/L
6	H(5 V)/L
7	GND
8	5V
IC502 (Option:Internal AMP)	
1	GND
2	GND
3	ANALOG OUT
4	H(5 V)/L
5	ANALOG OUT
6	Batt +
7	ANALOG OUT
8	GND
9	ANALOG OUT
10	7 V
11	ANALOG IN
12	ANALOG IN
13	GND
14	ANALOG IN
15	ANALOG IN
16	(Batt +)*0.5
17	ANALOG OUT
18	GND

PIN	VOLTAGE
19	ANALOG OUT
20	Batt +
21	ANALOG OUT
22	H(5 V)/L
23	ANALOG OUT
24	GND
25	NC
IC504 (Option: Internal AMP)	
1	H(5 V)/L
2	Batt +
3	GND
4	6.475 V
5	1.225 V
IC505	
1	Batt +
2	GND
3	5 V
IC506	
1	H(5 V)/L
2	Batt +
3	GND
4	12.26 V
5	1.225 V
IC507	
1	H(5 V)/L
2	8.1 V
3	GND
4	7.35 V
5	1.225 V
IC508(SYSTEM_5 V)	
1	Batt +
2	5 V
3	1 V
4	GND
5	1.5 V
6	1 V
7	H(5 V)/L
IC509	
1	3.795 V
2	Adjustable (Minimum 1.5 V)
3	3.795 V
4	Batt +
5	H(3.3 V)/L

PIN	VOLTAGE
6	NC
7	3.795 V
8	1.265
9	Adjustable
10	0 V
IC510	
1	Batt +
2	8.1 V
3	1 V
4	GND
5	1 V
6	1 V
7	H(5 V)/L
IC511	
1	4.2 V
2	4.2 V
3	GND
4	3.3 V
5	0.9 V
IC512 (Option: Rear_Camera)	
1	H(5 V)/L
2	8.1 V
3	GND
4	6.51 V
5	1.225 V
IC513	
1	4.2 V
2	GND
3	3.3 V
4	4.2 V
IC517	
1	H(5V)/ L
2	3.795 V
3	GND
4	3.244 V
5	1.225 V
IC518	
1	4.2 V
2	GND
3	1.8 V
4	4.2 V
IC519 (Option: XM_Ready)	
1	H(5 V)/L

PIN	VOLTAGE
2	Batt +
3	GND
4	11.684 V
5	1.27 V
FIN	GND
IC521	
1	H(5 V)/L
2	Batt +
3	GND
4	8.085 V
5	1.225 V
IC701	
1	NC
2	NC
3	ANALOG OUT
4	NC
5	NC
6	NC
7	GND
8	H(3.3 V)/L
9	H(3.3 V)/L
10	H(3.3 V)/L
11	H(3.3 V)/L
12	3.3 V
13	0 V
14	0 V
15	3.3 V
16	3.3 V
17	3.3 V
18	GND
19	3.3 V
20	0 V
21	3.3 V
22	0 V
23	H(3.3 V)/L
24	H(3.3 V)/L
25	0 V
26	0 V
27	OSC_IN
28	OSC_OUT
29	GND
30	3.3 V
31	3.3 V
32	0 V
33	1.8 V

PIN	VOLTAGE
34	NC
35	1.8 V
36	NC
37	0.8 V
38	GND
39	ANALOG IN
40	0.8 V
41	0.8 V
42	0.8 V
43	0.8 V
44	0.8 V
45	GND
46	1.3 V
47	0.8 V
48	ANALOG OUT
IC706 (Option: External AMP)	
1	H(5 V)/L
2	H(5 V)/L
3	0 V
4	NC
5	0 V
6	5 V
7	GND
8	5 V
9	H(5 V)/L
10	NC
11	H(5 V)/L
12	H(3.3 V)/L
13	H(3.3 V)/L
14	H(3.3 V)/L
15	NC
16	NC
17	NC
18	NC
19	NC
20	0 V
21	NC
22	GND
23	5 V
24	0 V
25	NC
26	H(5 V)/L
27	H(5 V)/L
28	H(5 V)/L

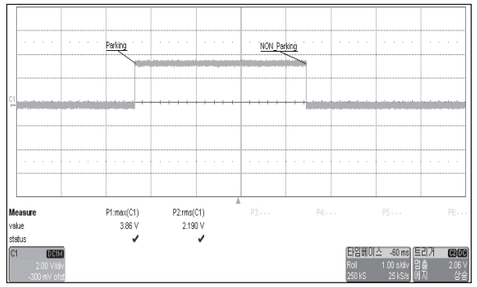
PIN	VOLTAGE
IC707 (Option: External AMP)	
1	H(5 V)/L
2	3.3 V
3	H(3.3 V)/L
4	H(3.3 V)/L
5	GND
6	H(3.3 V)/L
CN701	
1	GND
2	5 V
3	6.475 V
4	GND
5	5 V
6	5 V
7	GND
8	GND
9	8.1 V
10	8.1 V
11	GND
12	GND
13	3.795 V
14	3.795 V
15	GND
CN703	
1	7.35 V
2	7.35 V
3	GND
4	3.3 V
5	3.3 V
6	GND
7	GND
8	5 V
9	5 V
10	GND
11	GND
12	H(5 V)/L
13	GND
14	H(5 V)/L
15	H(5 V)/L
16	H(5 V)/L
17	H(5 V)/L
18	H(Batt +)/L
19	H(Batt +)/L
20	H(Batt+)/L

PIN	VOLTAGE
21	H(Batt +)/L
22	GND
23	H(5 V)/L
24	H(5 V)/L
25	H(3.3 V)/L
26	H(3.3 V)/L
27	H(3.3 V)/L
28	H(3.3 V)/L
29	H(3.3 V)/L
30	H(5 V)/L

MEMO

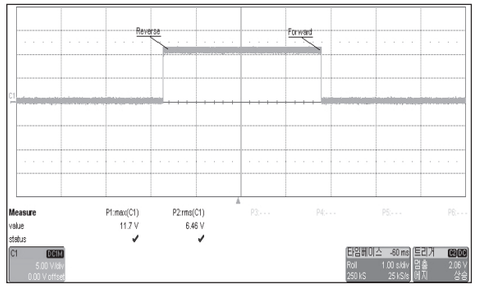
AUDIO WAVEFORMS

1. PARKING_BRAKE



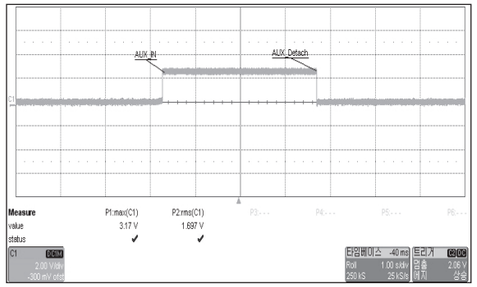
CN502 pin34

2. REVERSE_GEAR



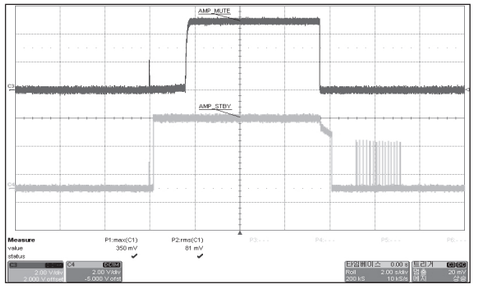
CN502 pin13

3. AUX_DETECT



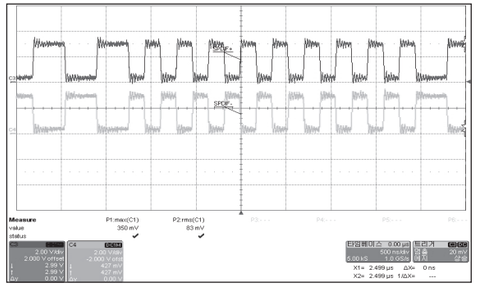
CN502 pin13

4. AUDIO POWER AMPLIFIER_MUTE/STBY (Option: Internal Amplifier)



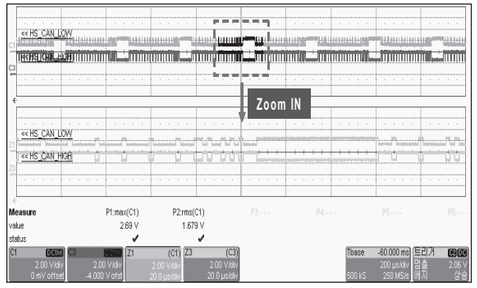
IC502 pin4 AMP_STBY
IC502 pin22 AMP_MUTE

5. SPDIF_OUT +/- (Option: External Amplifier)



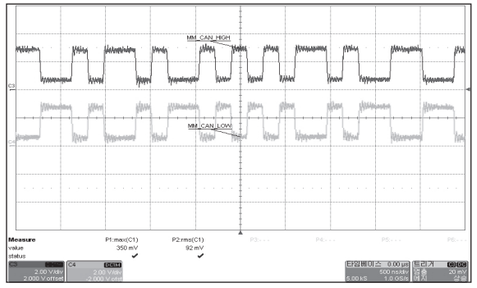
CN501 pin1 SPDIF_OUT +
CN501 pin2 SPDIF_OUT -

6. HIGH_SPEED_CAN_HIGH/LOW (Option: Remote Display)



CN502 pin25 HIGH_SPEED_CAN_HIGH
CN502 pin26 HIGH_SPEED_CAN_LOW

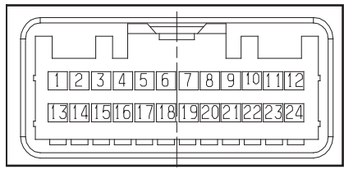
7. MM_CAN_HIGH/LOW (Option: External Amplifier)



CN501 pin12 MM_CAN_HIGH
CN501 pin24 MM_CAN_LOW

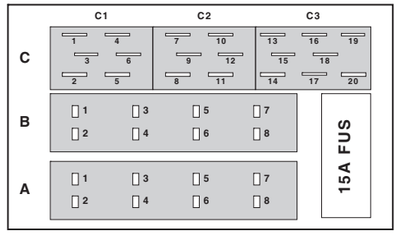
AUDIO CONNECTOR PIN DESCRIPTON

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B +(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

B. ISO 36pin POWER CONNECTOR

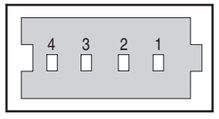


A. CAR INTERFACE	
A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT	
B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

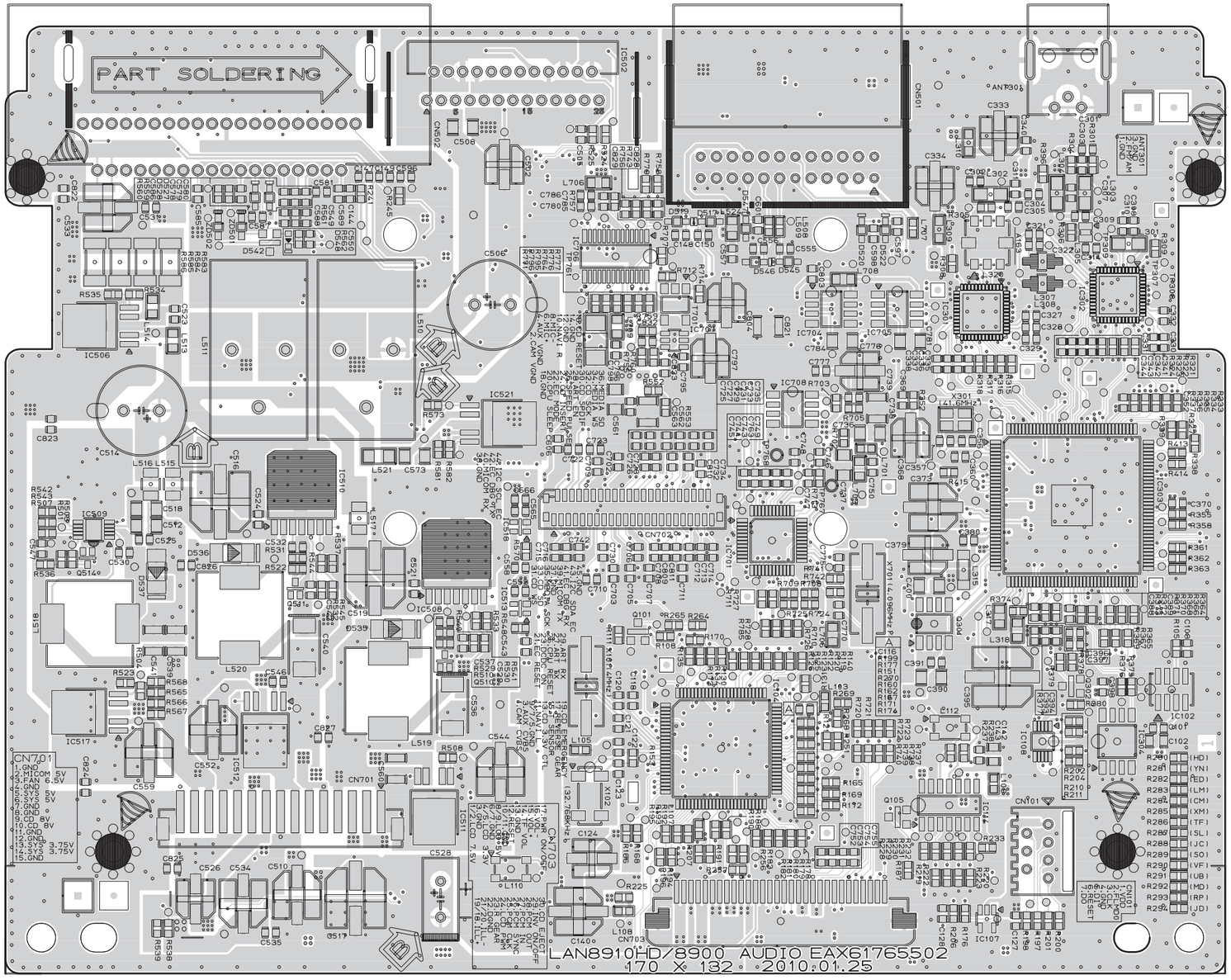
C1. CAR INTERFACE	
C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light
C2. CAR INTERFACE	
C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT
C3. CAR INTERFACE	
C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

C. USB CONNECTOR

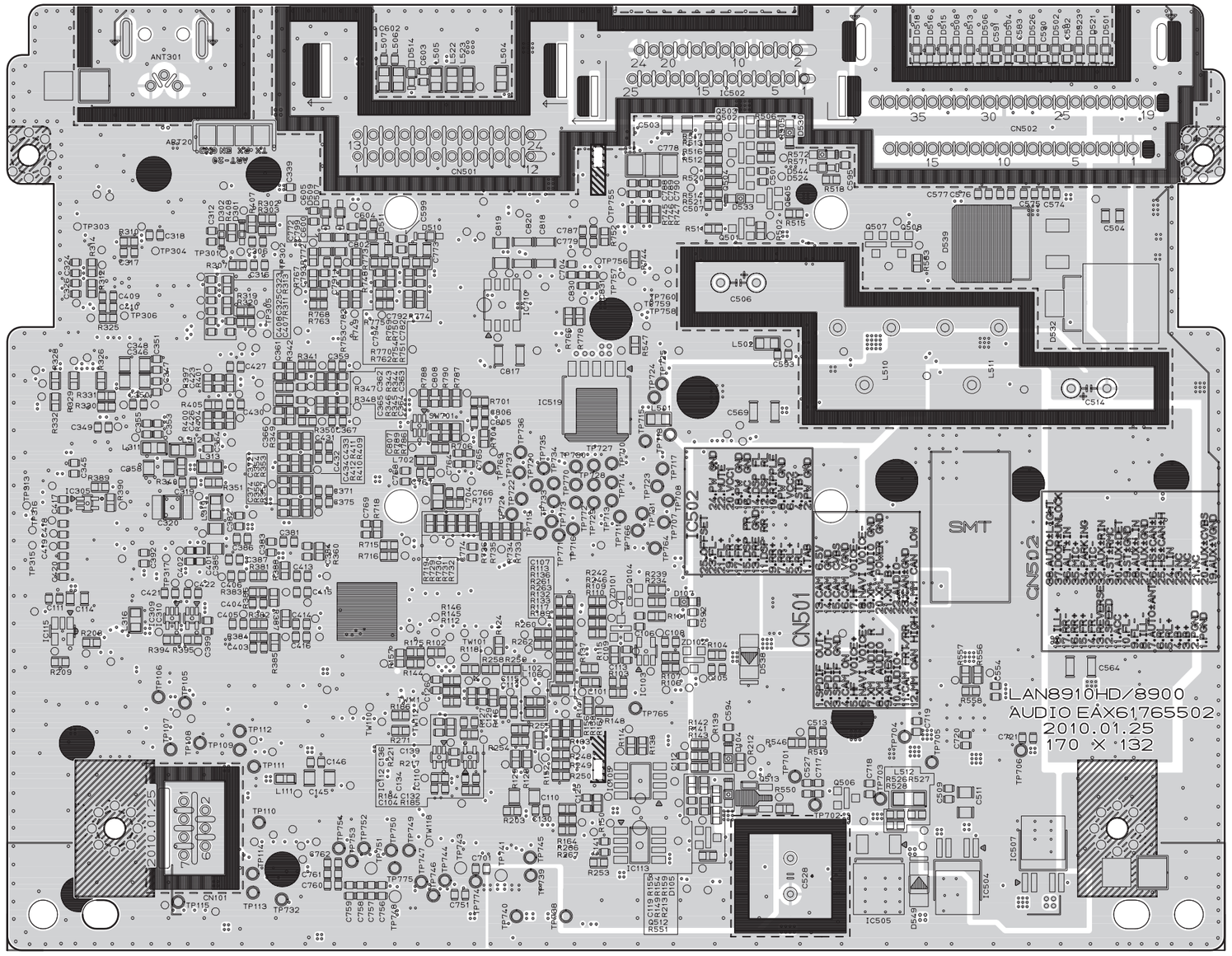


No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

AUDIO PRINTED CIRCUIT BOARD (TOP VIEW)



AUDIO PRINTED CIRCUIT BOARD (BOTTOM VIEW)



SECTION 7. FRONT PART

[CONTENTS]

• FRONT BLOCK DIAGRAM 7-1
• FRONT SCHEMATIC DIAGRAM (LCD TW8816) 7-3
• FRONT SCHEMATIC DIAGRAM (LCD POWER) 7-5
• FRONT SCHEMATIC DIAGRAM (LCD KEY MICOM) 7-7
• FRONT SCHEMATIC DIAGRAM (LCD INVERTER TRANS) 7-9
• FRONT SCHEMATIC DIAGRAM (KEY & SCAN) 7-11
• FRONT SCHEMATIC DIAGRAM (KEY & POWER) 7-13
• FRONT CONNECTOR VOLTAGE SHEET 7-15
• FRONT WAVEFORMS 7-17
• FRONT PRINTED CIRCUIT BOARD (TOP VIEW) 7-19
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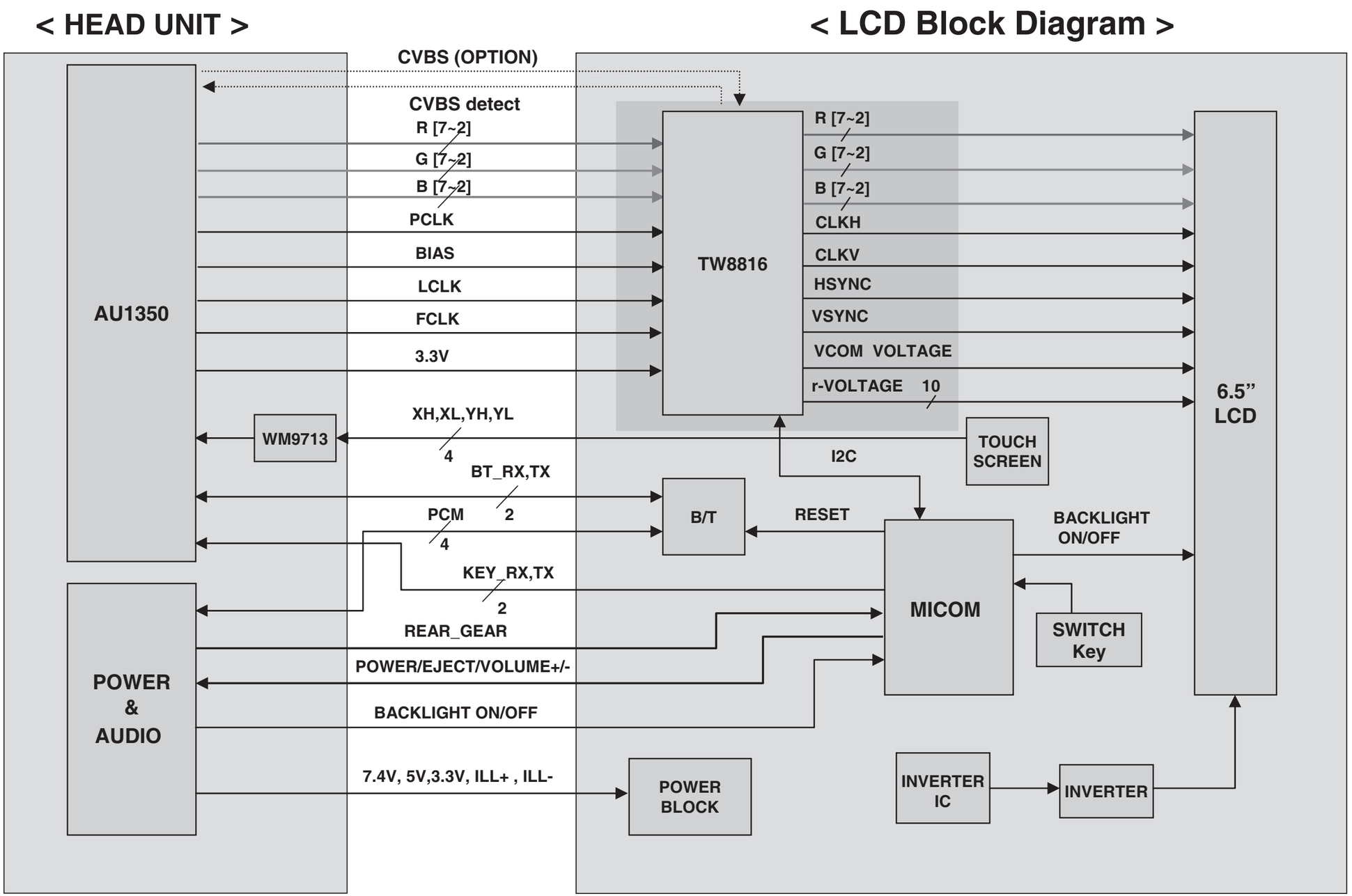
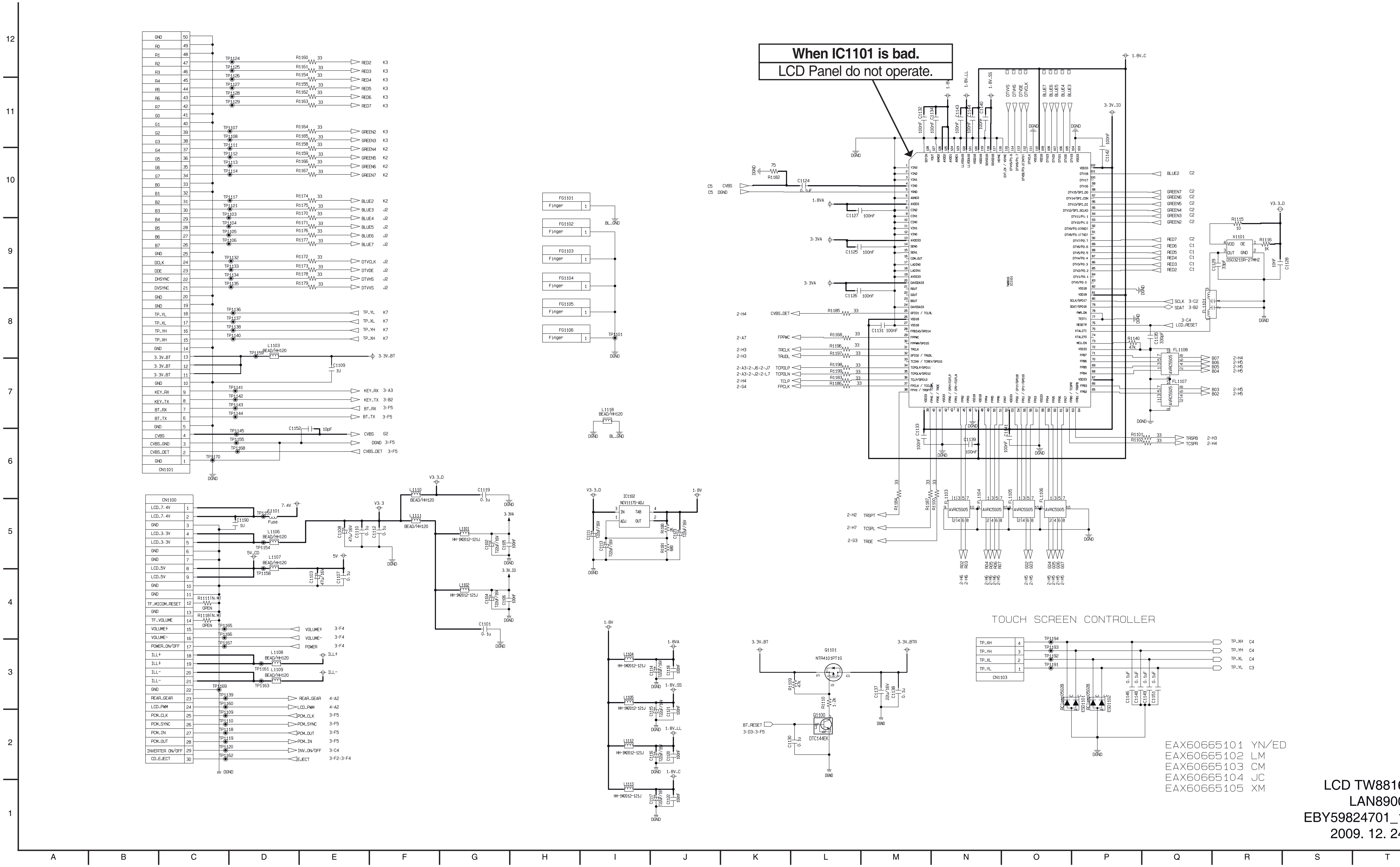
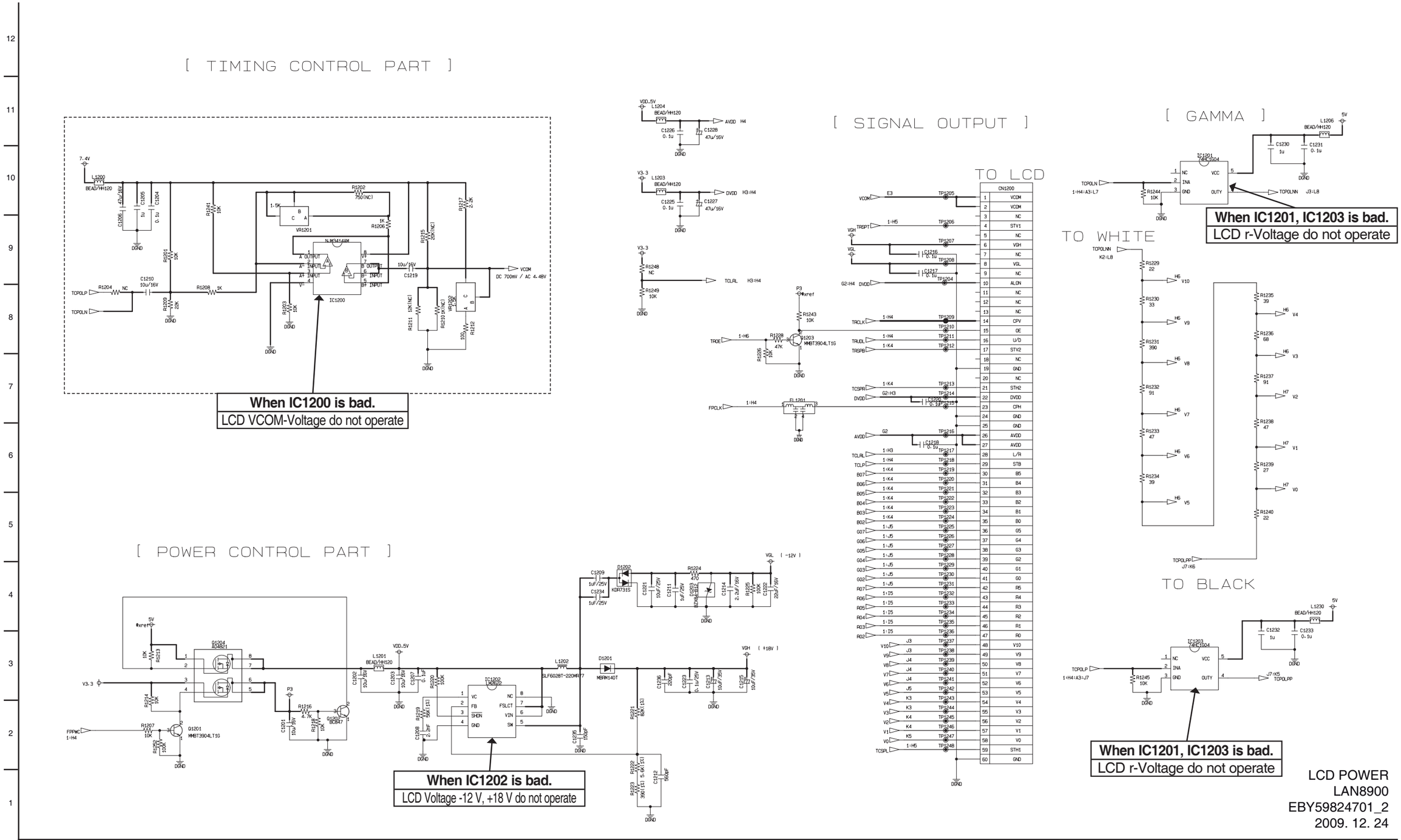
FRONT BLOCK DIAGRAM



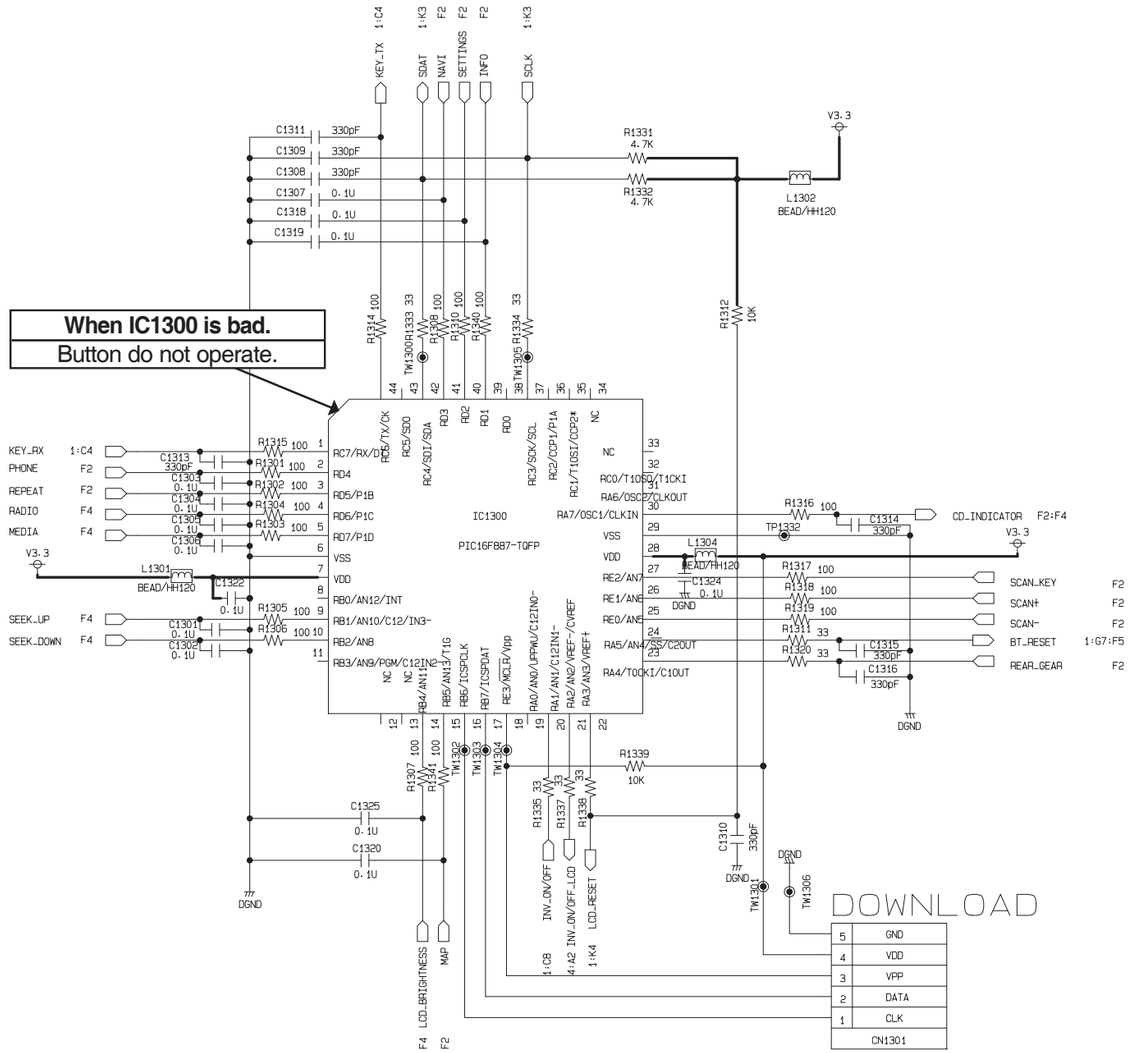
FRONT SCHEMATIC DIAGRAM (LCD TW8816)

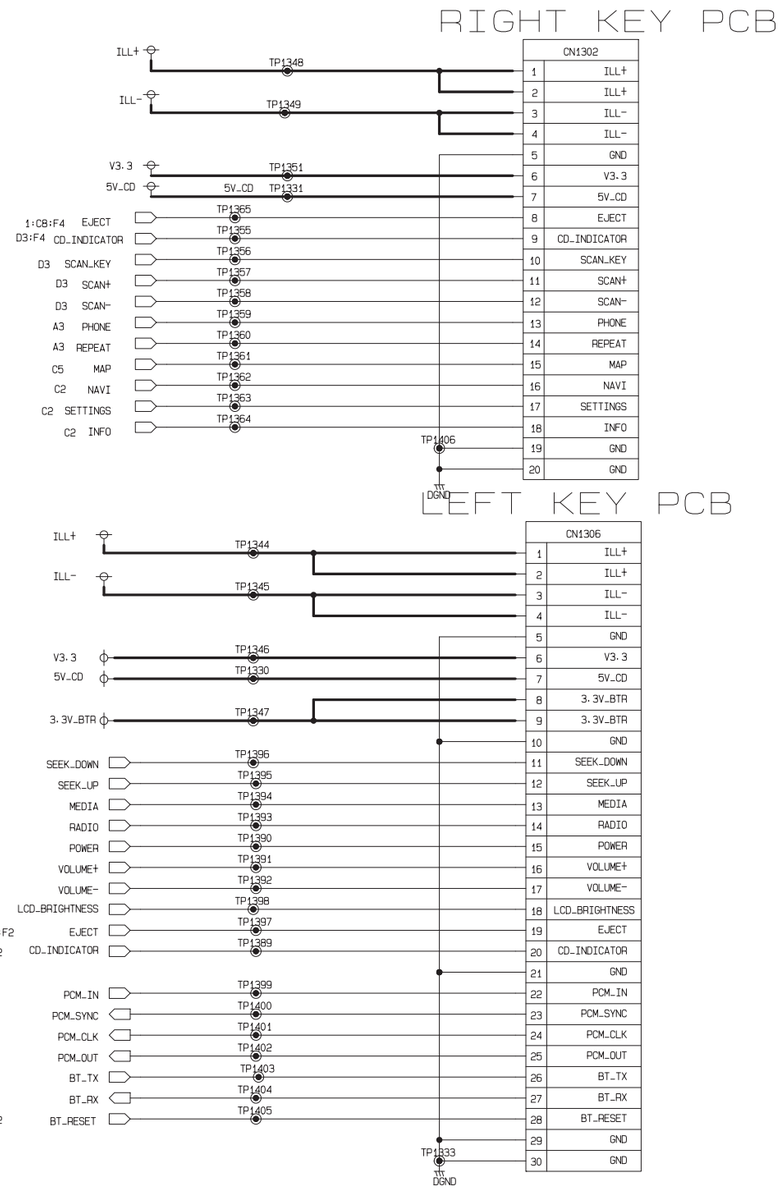

When IC1101 is bad.
LCD Panel do not operate.
TOUCH SCREEN CONTROLLER
CN1101
CN1100
CN1103
IC1101 TW8816
IC1102 NCV1117S-ADJ
X1101 DS0321SR-27MHZ
Q1101 NTR4101PT1G
Q1100 DTC144EK
EAX60665101 YN/ED
EAX60665102 LM
EAX60665103 CM
EAX60665104 JC
EAX60665105 XM
LCD TW8816
LAN8900
EBY59824701_1
2009. 12. 24

FRONT SCHEMATIC DIAGRAM (LCD POWER)



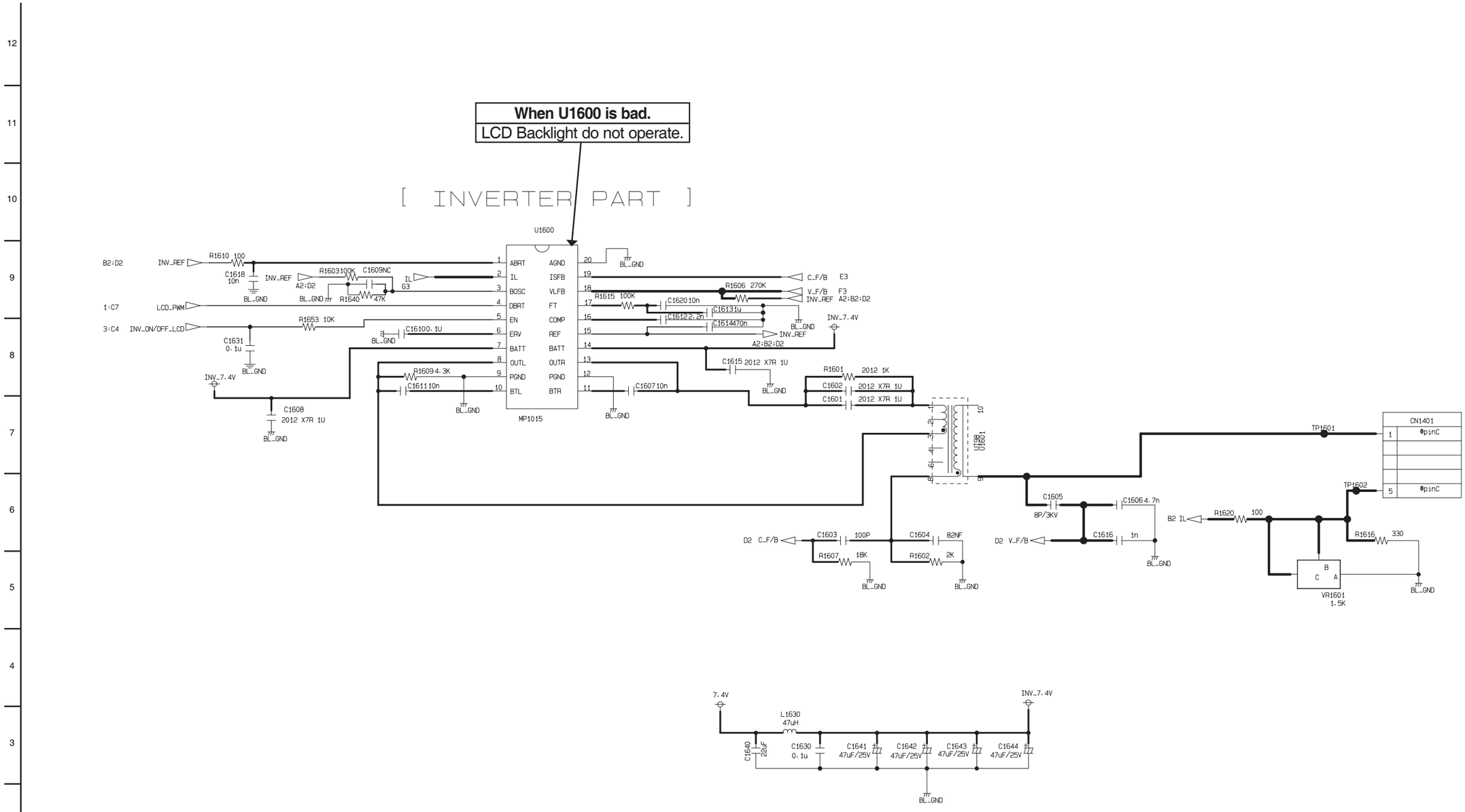
FRONT SCHEMATIC DIAGRAM (LCD KEY MICOM)





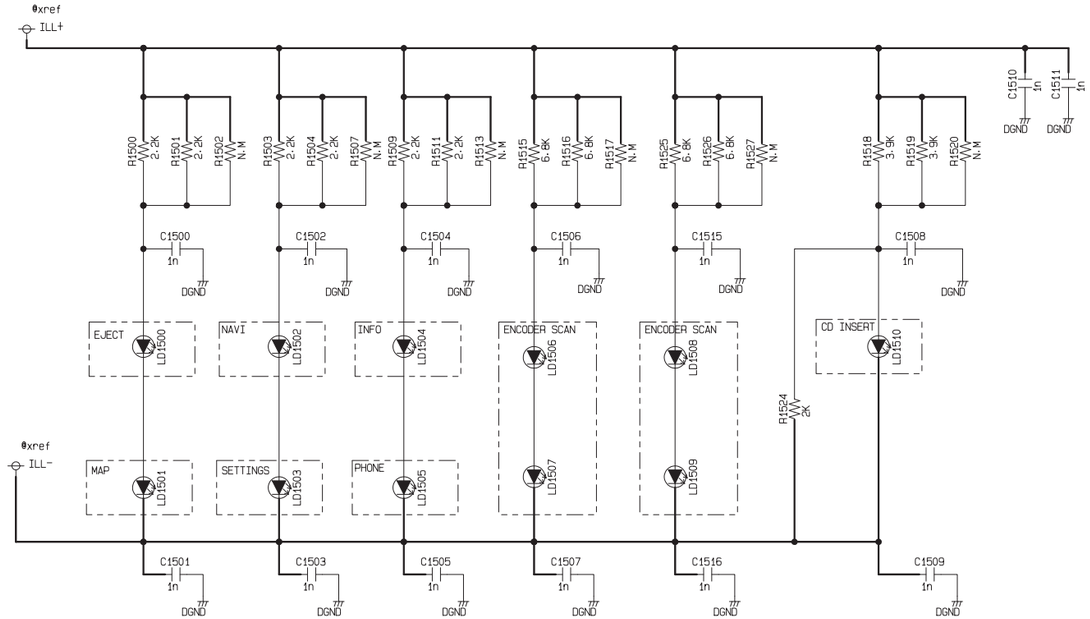
LCD KEY MICOM
LAN8900
EBY59824701_3
2009. 12. 24

FRONT SCHEMATIC DIAGRAM (LCD INVERTER TRANS)



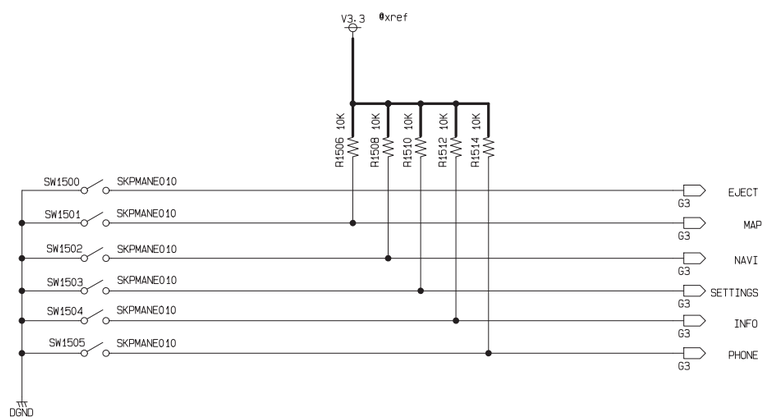
LCD INVERTER TRANS
LAN8900
EBY59824701_4
2009. 12. 24

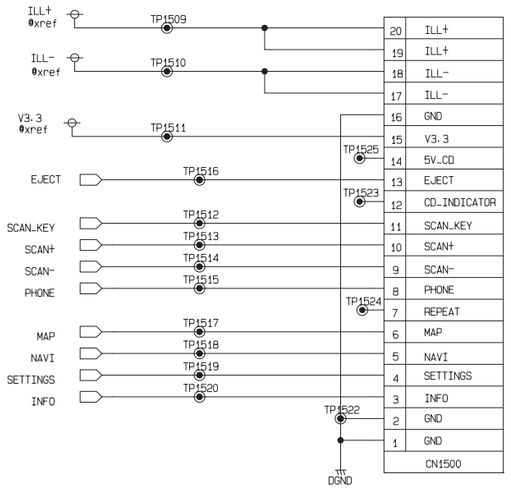
FRONT SCHEMATIC DIAGRAM (KEY & SCAN)

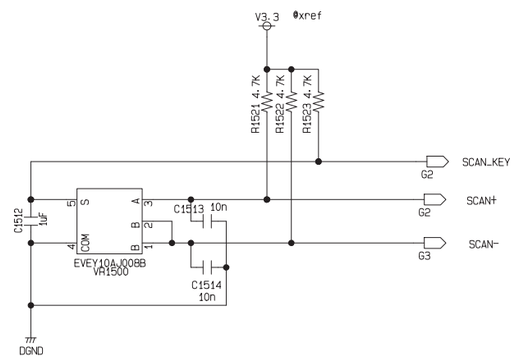


ILL+ = 14V (10.5~16V) 3.5mA

ILL- = PWM(0~14V PULSE)

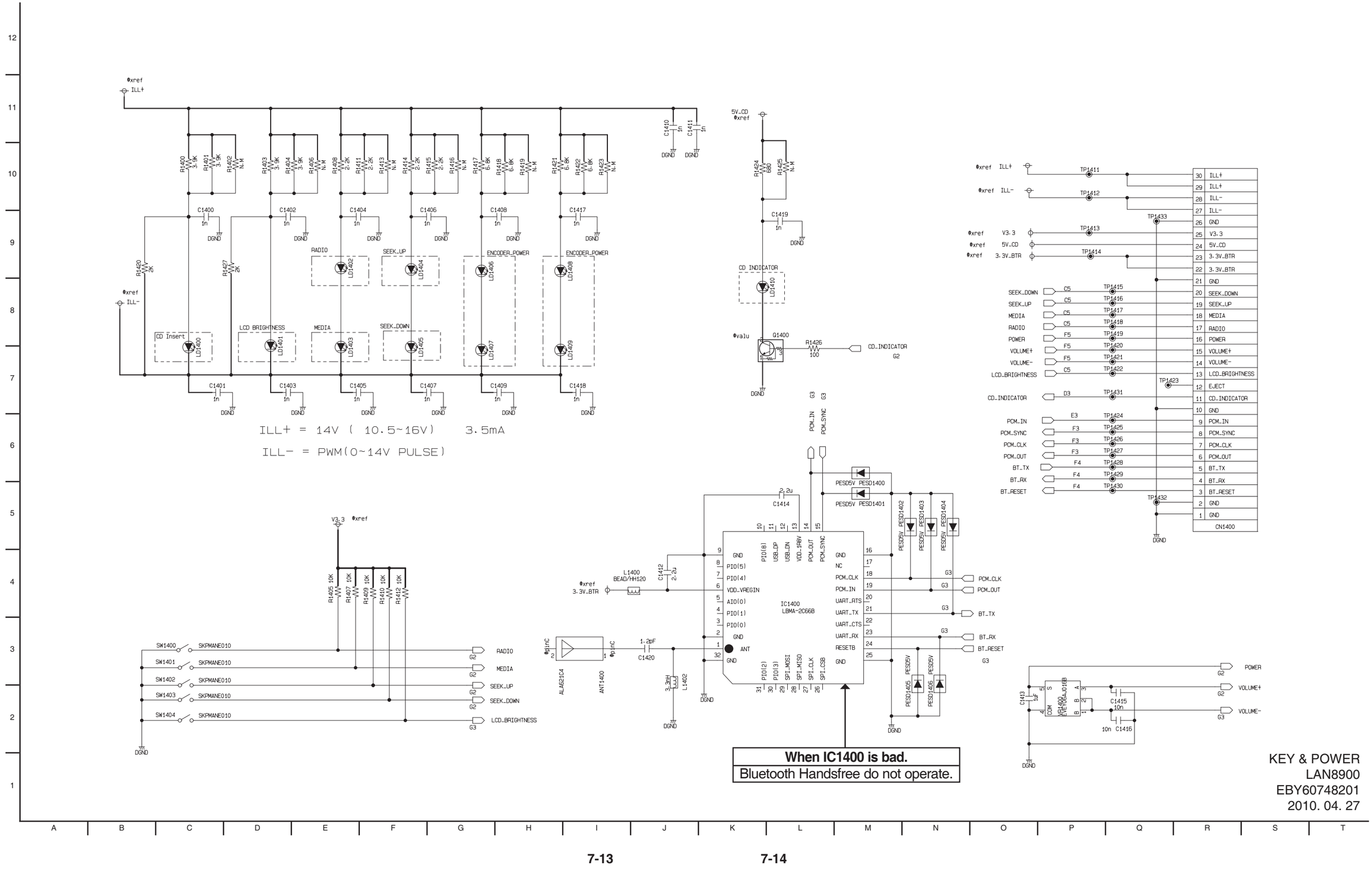






KEY & SCAN
LAN8900
EBY60748401
2010. 04. 27

FRONT SCHEMATIC DIAGRAM (KEY & POWER)



FRONT CONNECTOR VOLTAGE SHEET

PIN	VOLTAGE
CN1100	
1	7.4 V
2	7.4 V
3	GND
4	3.3 V
5	3.3 V
6	GND
7	GND
8	5 V
9	5 V
10	GND
11	GND
12	NC
13	GND
14	NC
15	H/L
16	H/L
17	H/L
18	12 V
19	12 V
20	0 V
21	0 V
22	GND
23	H/L
24	PWM
25	CLK
26	DATA
27	DATA
28	DATA
29	H/L
30	H/L
CN1101	
1	GND
2	H/L
3	GND
4	Analog SIGNAL
5	GND
6	H/L
7	H/L
8	H/L
9	H/L
10	GND
11	3.3 V
12	3.3 V
13	3.3 V

PIN	VOLTAGE
14	GND
15	DATA
16	DATA
17	DATA
18	DATA
19	GND
20	GND
21	DATA
22	DATA
23	DATA
24	CLK
25	GND
26	DATA
27	DATA
28	DATA
29	DATA
30	DATA
31	DATA
32	GND
33	GND
34	DATA
35	DATA
36	DATA
37	DATA
38	DATA
39	DATA
40	GND
41	GND
42	DATA
43	DATA
44	DATA
45	DATA
46	DATA
47	DATA
48	GND
49	GND
50	GND
CN1103	
1	DATA
2	DATA
3	DATA
4	DATA
CN1200	
1	AC: 4.48 V DC: 700 mV

PIN	VOLTAGE
2	AC: 4.48 V DC: 700 mV
3	NC
4	DATA
5	NC
6	18 V
7	NC
8	-12 V
9	NC
10	3.3 V
11	NC
12	NC
13	NC
14	DATA
15	DATA
16	H/L
17	0 V
18	NC
19	GND
20	NC
21	DATA
22	3.3 V
23	1.3 V, SINE SIGNAL
24	GND
25	GND
26	5 V
27	5 V
28	0 V
29	DATA
30	DATA
31	DATA
32	DATA
33	DATA
34	DATA
35	DATA
36	DATA
37	DATA
38	DATA
39	DATA
40	DATA
41	DATA
42	DATA
43	DATA
44	DATA

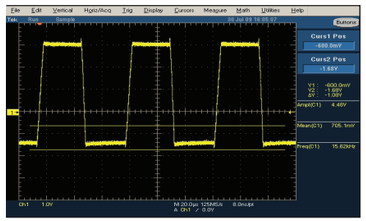
PIN	VOLTAGE
45	DATA
46	DATA
47	DATA
48	4.16 V
49	3.68 V
50	640 mV
51	160 mV
52	640 mV
53	1.12 V
54	1.52 V
55	2.24 V
56	2.62 V
57	3.84 V
58	4.16 V
59	3.3 V
60	GND
CN1302	
1	12 V
2	12 V
3	0 V
4	0 V
5	GND
6	3.3 V
7	5 V
8	H/L
9	H/L
10	H/L
11	H/L
12	H/L
13	H/L
14	H/L
15	H/L
16	H/L
17	H/L
18	H/L
19	GND
20	GND
CN1306	
1	12 V
2	12 V
3	0 V
4	0 V
5	GND
6	3.3 V
7	5 V

PIN	VOLTAGE
8	3.3 V
9	3.3 V
10	GND
11	H/L
12	H/L
13	H/L
14	H/L
15	H/L
16	H/L
17	H/L
18	H/L
19	H/L
20	H/L
21	GND
22	H/L
23	H/L
24	H/L
25	H/L
26	H/L
27	H/L
28	H/L
29	GND
30	GND
CN1400	
1	GND
2	GND
3	H/L
4	H/L
5	H/L
6	H/L
7	H/L
8	H/L
9	H/L
10	GND
11	NC
12	H/L
13	H/L
14	H/L
15	H/L
16	H/L
17	H/L
18	H/L
19	H/L
20	H/L
21	GND

PIN	VOLTAGE
22	3.3 V
23	3.3 V
24	NC
25	3.3 V
26	GND
27	0 V
28	0 V
29	12 V
30	12 V
CN1500	
1	GND
2	GND
3	H/L
4	H/L
5	H/L
6	H/L
7	H/L
8	H/L
9	H/L
10	H/L
11	H/L
12	NC
13	NC
14	NC
15	3.3 V
16	GND
17	0 V
18	0 V
19	12 V
20	12 V

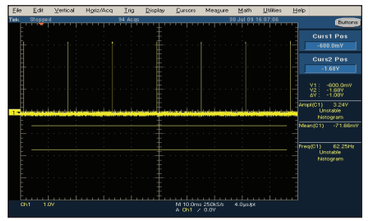
FRONT WAVEFORMS

1.



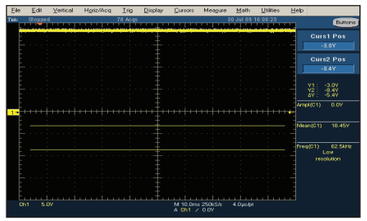
CN1200 pin1, 2_VCOM

2.



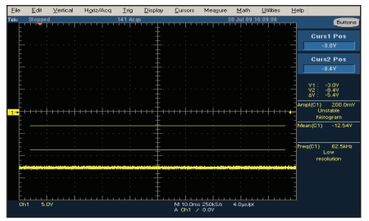
CN1200 pin4_STV1

3.



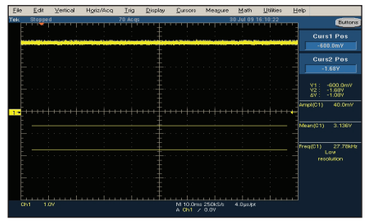
CN1200 pin6_VGH

4.



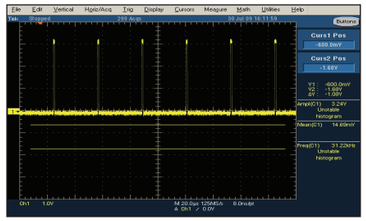
CN1200 pin8_VGL

5.



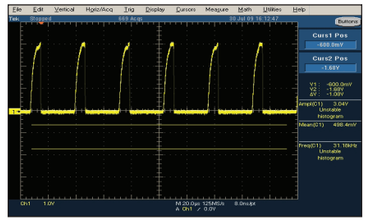
CN1200 pin10_ALON

6.



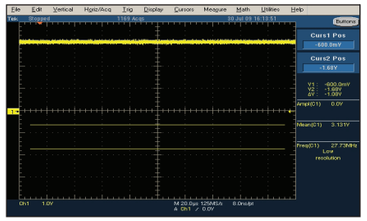
CN1200 pin14_CPV

7.



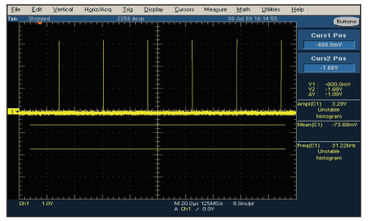
CN1200 pin15_OE

8.



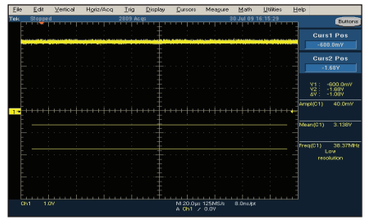
CN1200 pin16_UD

9.



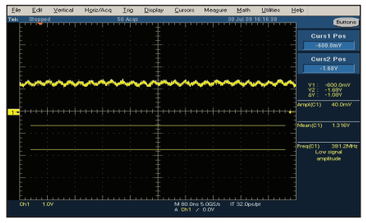
CN1200 pin21_STH2

10.



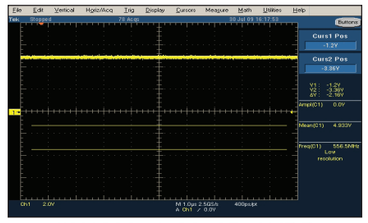
CN1200 pin22_DVDD

11.



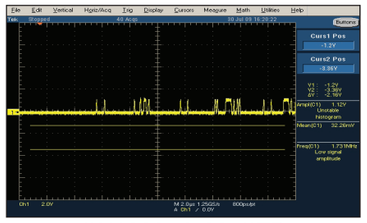
CN1200 pin23_CPH

12.



CN1200 pin26, 27_AVDD

13.



CN1200 pin29_STB

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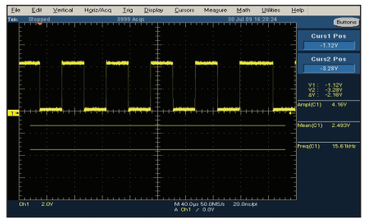

CN1200 pin48_V10

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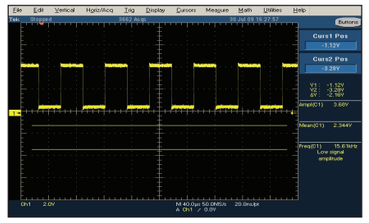

CN1200 pin49_V9

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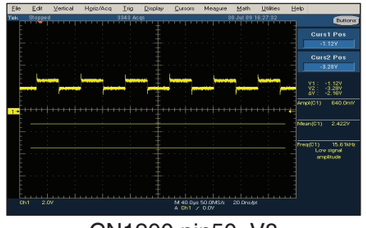

CN1200 pin50_V8

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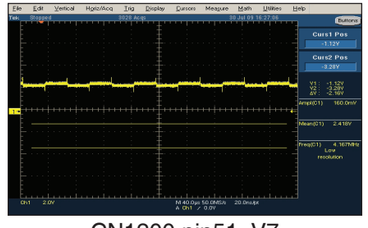

CN1200 pin51_V7

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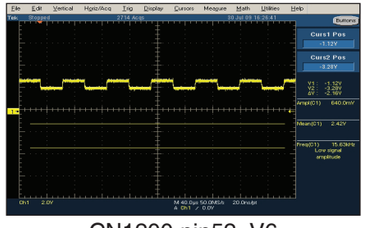

CN1200 pin52_V6

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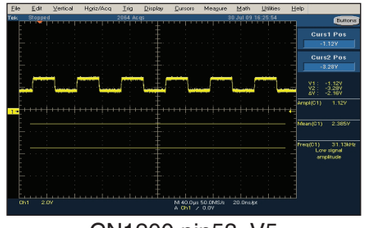

CN1200 pin53_V5

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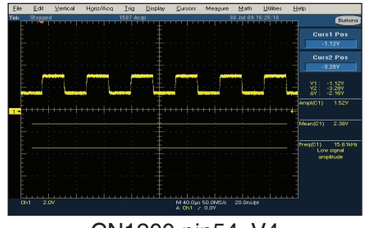

CN1200 pin54_V4

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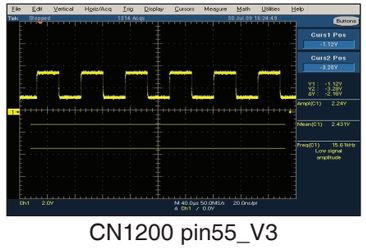

CN1200 pin55_V3

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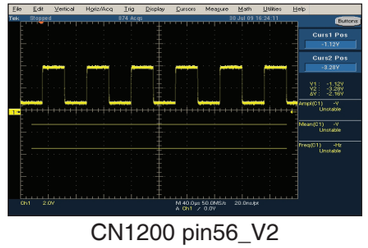

CN1200 pin56_V2

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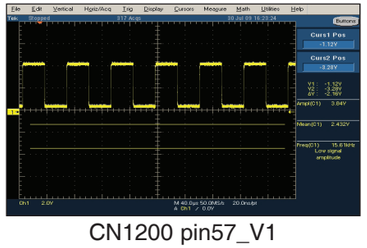

CN1200 pin57_V1

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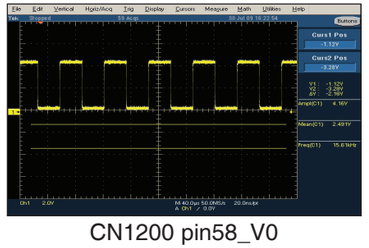

CN1200 pin58_V0

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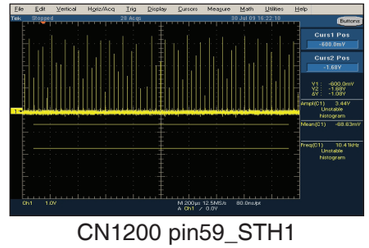
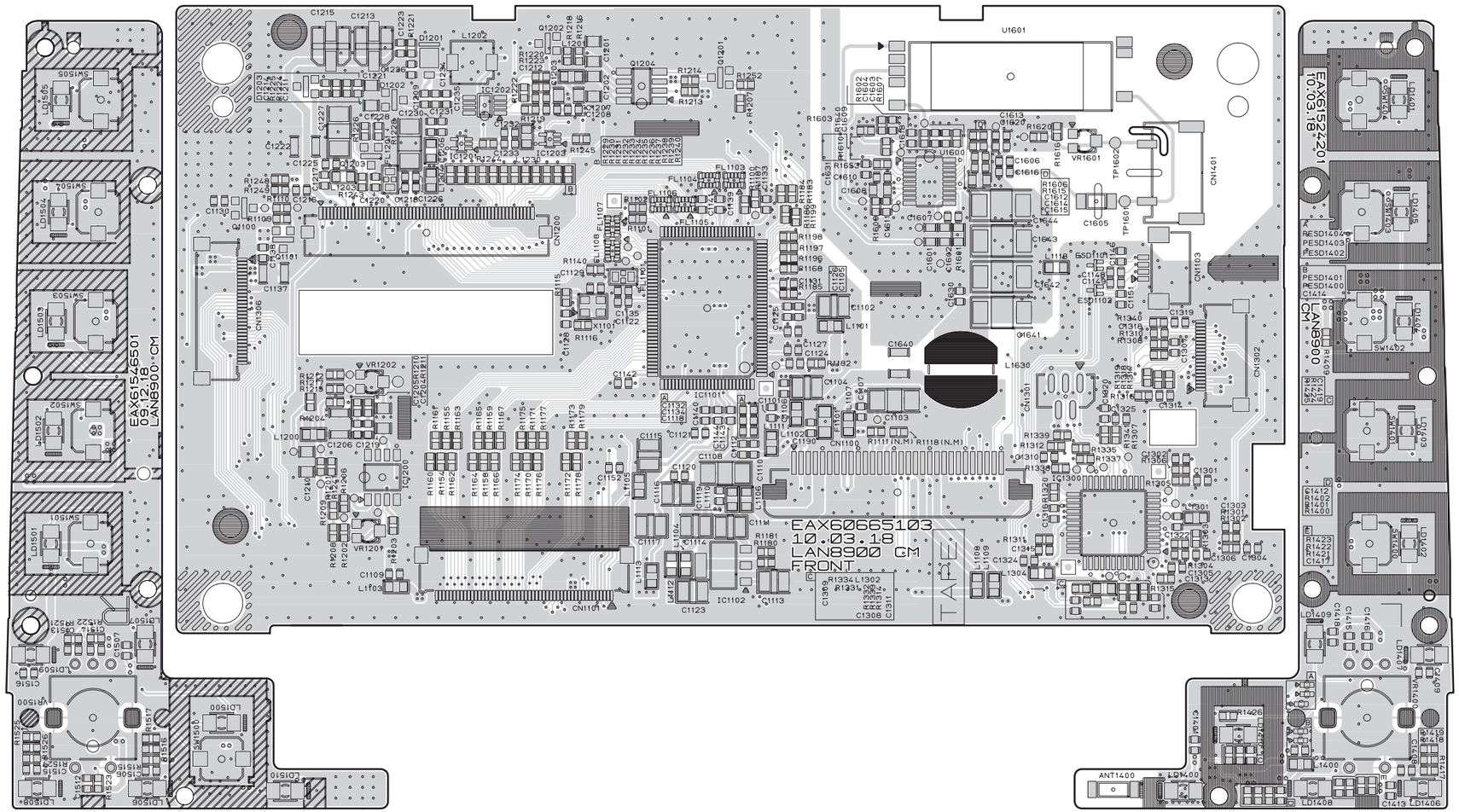
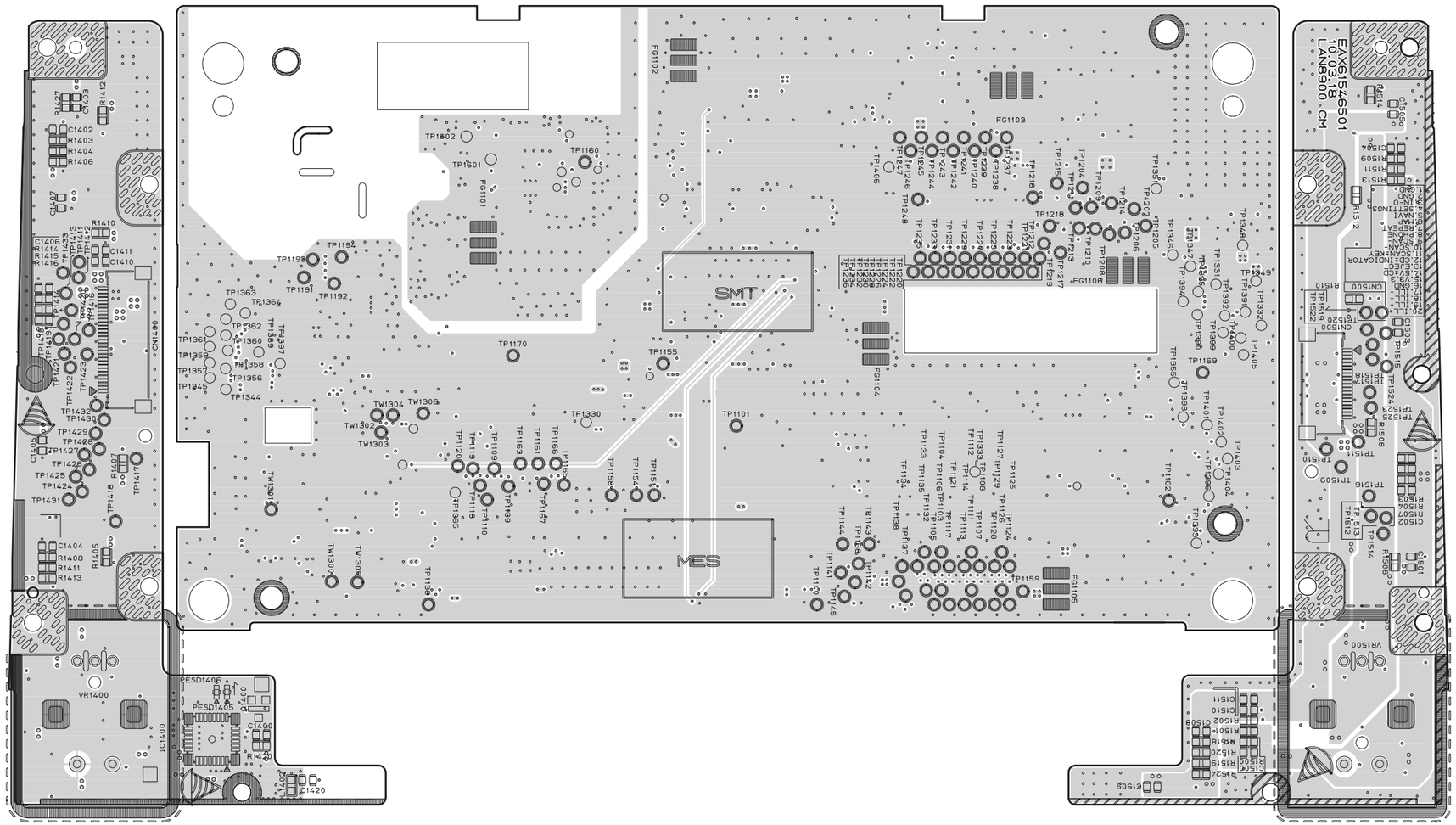


CN1200 pin59_STH1

FRONT PRINTED CIRCUIT BOARD (TOP VIEW)



FRONT PRINTED CIRCUIT BOARD (BOTTOM VIEW)



MEMO

MEMO

SECTION 8. GPS PART

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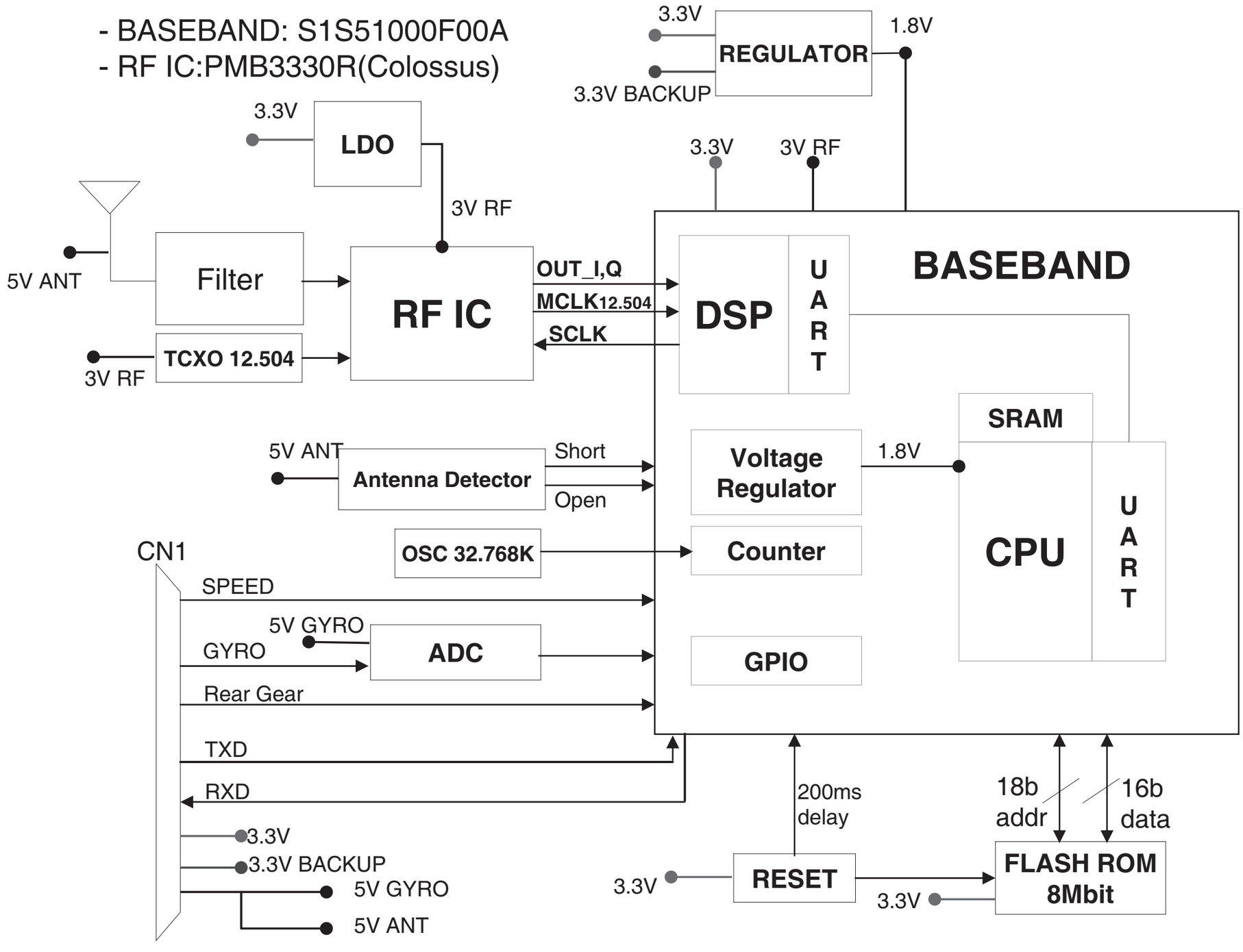
• GPS SCHEMATIC DIAGRAM_1 8-3
• GPS SCHEMATIC DIAGRAM_2 8-5
• GPS IC/CONNECTOR VOLTAGE SHEET 8-7
• GPS WAVEFORMS. 8-9
• GPS PRINTED CIRCUIT BOARD (TOP VIEW) 8-11
• GPS PRINTED CIRCUIT BOARD (BOTTOM VIEW) 8-11

GPS BLOCK DIAGRAM



GPS SCHEMATIC DIAGRAM_1

When U4 is bad.
Can not fix GPS satellite Signal.

When U7 or U9 is bad.
DR(Gyro) do not operate.

When X2 is bad.
GPS Module does not operate.
(All functions of GPS Module are not available)

When U3 is bad.
Can not fix GPS satellite Signal.

When 12.5MHz is bad.
GPS Module does not operate. (All functions of GPS Module are not available)

Connector

Power

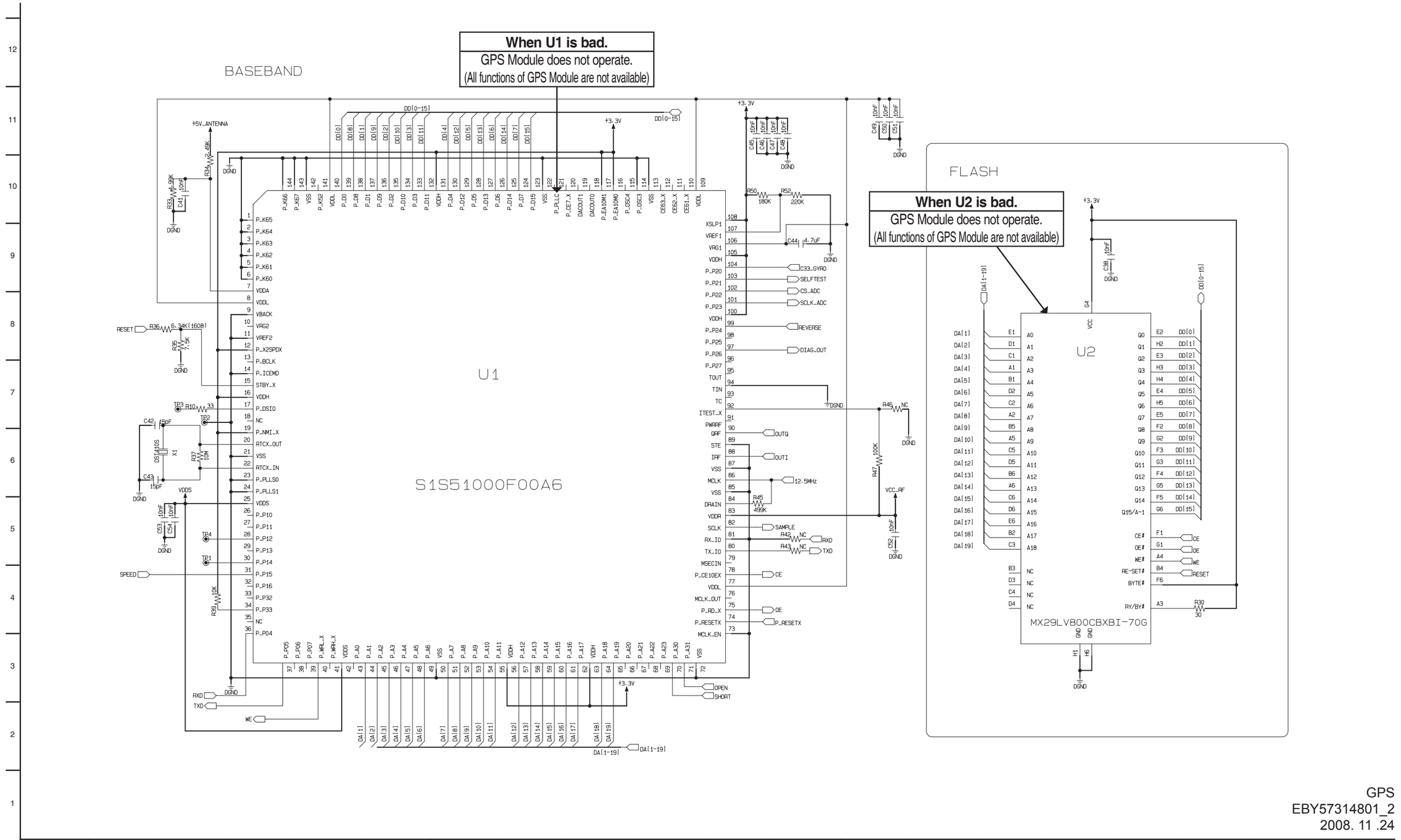
Reset

ADC

COLOSSUS

Antenna Detector

GPS SCHEMATIC DIAGRAM_2



GPS
EBY57314801_2
2008. 11 .24

GPS IC/CONNECTOR VOLTAGE SHEET

PIN	VOLTAGE
U1	
1	GND
2	GND
3	GND
4	GND
5	GND
6	GND
7	3.3
8	1.8
9	GND
10	N.C
11	GND
12	3.3
13	N.C
14	GND
15	1.8
16	3.3
17	0
18	N.C
19	3.3
20	H/L
21	GND
22	H/L
23	GND
24	GND
25	1.8
26	N.C
27	N.C
28	N.C
29	N.C
30	N.C
31	H/L
32	N.C
33	N.C
34	3.3
35	N.C
36	H/L
37	H/L
38	N.C
39	N.C
40	H/L
41	N.C
42	1.8
43	N.C
44	H/L

PIN	VOLTAGE
45	H/L
46	H/L
47	H/L
48	H/L
49	H/L
50	GND
52	H/L
52	H/L
53	H/L
54	H/L
55	H/L
56	3.3
57	H/L
58	H/L
59	H/L
60	H/L
61	H/L
62	H/L
63	3.3
64	H/L
65	H/L
66	N.C
67	N.C
68	N.C
69	N.C
70	4.8
71	2.8
72	GND
73	GND
74	3.3
75	H/L
76	N.C
77	1.8
78	H/L
79	N.C
80	N.C
81	N.C
82	H/L
83	3.0
84	H/L
85	GND
86	H/L
87	GND
88	H/L
89	GND

PIN	VOLTAGE
90	H/L
91	N.C
92	3.0
93	N.C
94	GND
95	N.C
96	N.C
97	N.C
98	N.C
99	H/L
100	3.3
101	H/L
102	H/L
103	H/L
104	H/L
105	3.3
106	1.8
107	1.8
108	3.3
109	1.8
110	N.C
111	N.C
112	N.C
113	GND
114	GND
115	N.C
116	3.3
117	3.3
118	N.C
119	N.C
120	N.C
121	N.C
122	GND
123	H/L
124	H/L
125	H/L
126	H/L
127	H/L
128	H/L
129	H/L
130	H/L
131	3.3
132	H/L
133	H/L
134	H/L

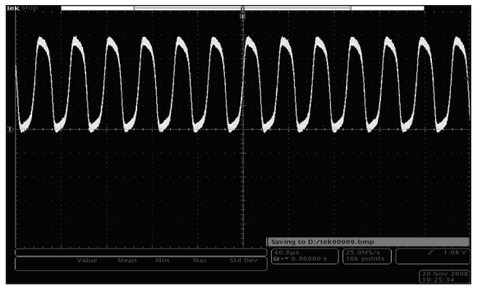
PIN	VOLTAGE
135	H/L
136	H/L
137	H/L
138	H/L
139	H/L
140	1.8
141	N.C
142	GND
143	GND
144	GND
U3	
1	H/L
2	GND
3	3.0
4	GND
5	H/L
6	GND
7	H/L
8	H/L
9	GND
10	GND
11	H/L
12	H/L
13	GND
14	H/L
15	3.3
16	GND
17	H/L
18	H/L
19	3.0
20	N.C
21	H/L
22	H/L
23	3.0
24	H/L
U4	
1	3.3
2	GND
3	3.3
4	3.0
5	N.C
U5	
1	3.3
2	GND
3	1.8

PIN	VOLTAGE
4	3.3
U7	
1	H/L
2	4.9
3	GND
4	H/L
5	H/L
6	4.9
7	4.9
8	H/L
U8	
1	3.3
2	3.3
3	GND
4	3.3
5	3.3
U9	
1	H/L
2	4.9
3	GND
4	H/L
5	H/L
6	1.0
U10 , U11	
1	3.3
2	3.3
3	GND
CN1	
1	3.3
2	3.3
3	GND
4	H/L
5	H.L
6	N.C
7	3.3
8	N.C
9	N.C
10	H/L
11	3.3
12	GND
13	N.C
14	N.C
15	H/L
16	GND
17	4.9

PIN	VOLTAGE
18	GND
CN2	
1	4.7
2	GND
3	GND
4	GND
5	GND

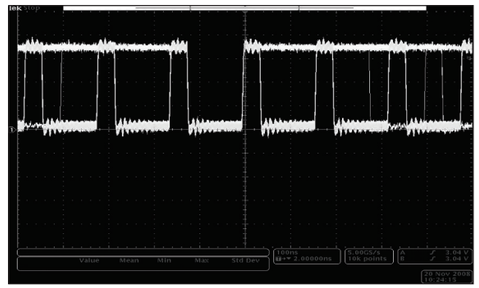
GPS WAVEFORMS

1.



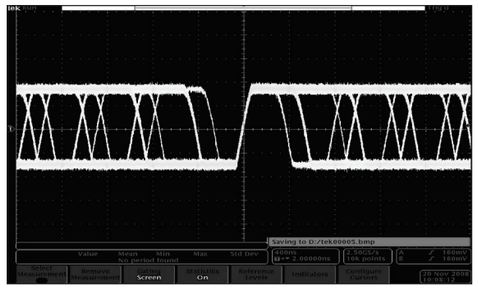
U1 pin20_RTCX_OUT

2.



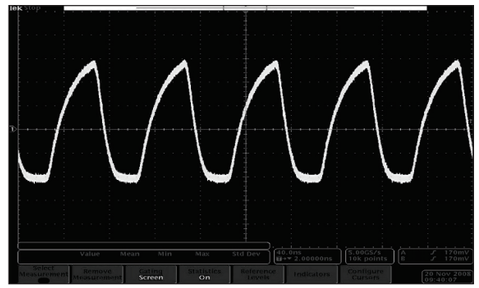
U1 pin75_OE

3.



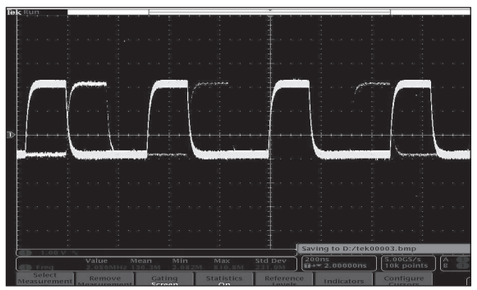
U3 pin11, 14_OUTI,Q

4.



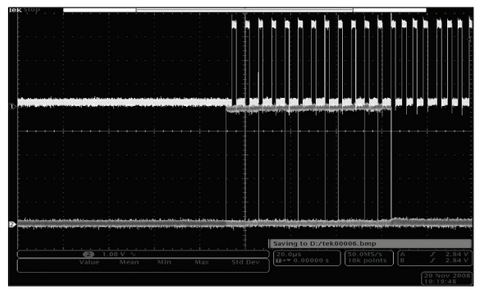
U3 pin12_U1 main CLK

5.



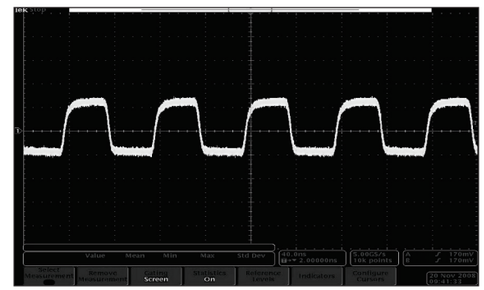
U3 pin5, Sample CLK

6.



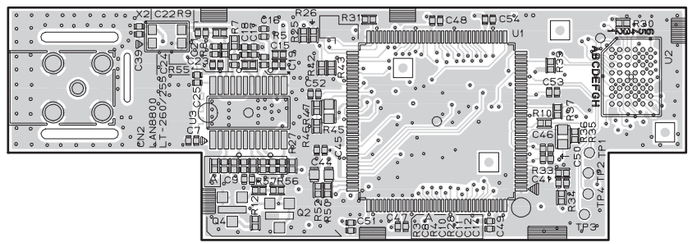
U7 pin5, 8_SCLK, Gyro

7.

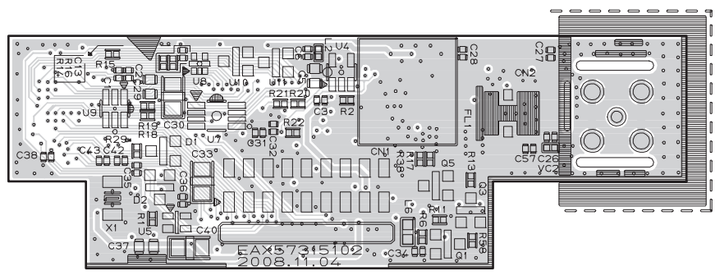


X2 pin3_12.504 MHz

GPS PRINTED CIRCUIT BOARD (TOP VIEW)



GPS PRINTED CIRCUIT BOARD (BOTTOM VIEW)



MEMO

SECTION 9. TROUBLESHOOTING GUIDE

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• GENERAL PART (NAVIGATION) 9-1
• MAIN PART 9-3
• AUDIO PART 9-5
• FRONT PART 9-14
• GPS PART 9-15

GENERAL PART (Navigation)

Cannot identify the current location. (GPS not receiving)

GPS cannot be used indoors and must be connected to a power source with ACC in a vehicle in a location where the signal from the sky can be received easily.
When initially connecting the GPS, it usually takes about 10 minutes to be working normally, but the connection speed can differ depending on the weather condition, and surrounding obstacles.
If the GPS connection is unstable for a long period of time, try the following.

- Check if the product is connected to a power source.
- Check if the back of the GPS product is in a location where the sky can be seen well.
- If there are high buildings or if you are under a tree, move to a location where there aren't any obstacles.

Cannot hear the voice guide.

The volume is not set correctly, or it is turned off. Adjust the volume of voice guidance.

There is a difference between the driving road and the road on the map in the product.

Even though GPS is usually very accurate, there is a small margin for error.
When the GPS receiver is installed, there can be an error of about 10m. But for newly built roads, the problem could come from the data update to the map.

Cannot see the map.

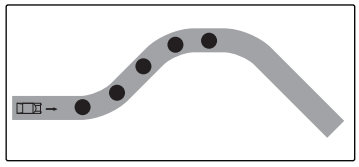
Perhaps you cannot see the map even when you have executed the navigation menu.
This happens when the data within the memory is damaged. Delete all the data in the memory and install the data again. If the issue persists after installation, contact the A/S center.

The path guide can be different from the actual path. (Path guide error)

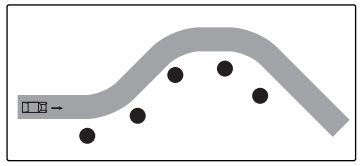
- When the road is closely parallel.
- When the splitting road angle is very small.
- When there is an adjacent road when turning.
- When driving on a road that is narrowing fast.
- When driving through the mountain or where the road is too curvy.
- When the starting, passing and arriving locations are too close within 1km.
- When you have set the starting, passing or arriving location more than 1km away from the road.
- When driving through the tunnel.

Map matching

As mentioned, the GPS systems used by this Navigation System are susceptible to certain errors.
Their calculations may on occasion place you in a location the map where no road exists. In this situation, the processing system understands that vehicles travel only on roads, and is able to correct your position by adjusting it to a nearby road. This is called map matching.



With map matching.



With no map matching.

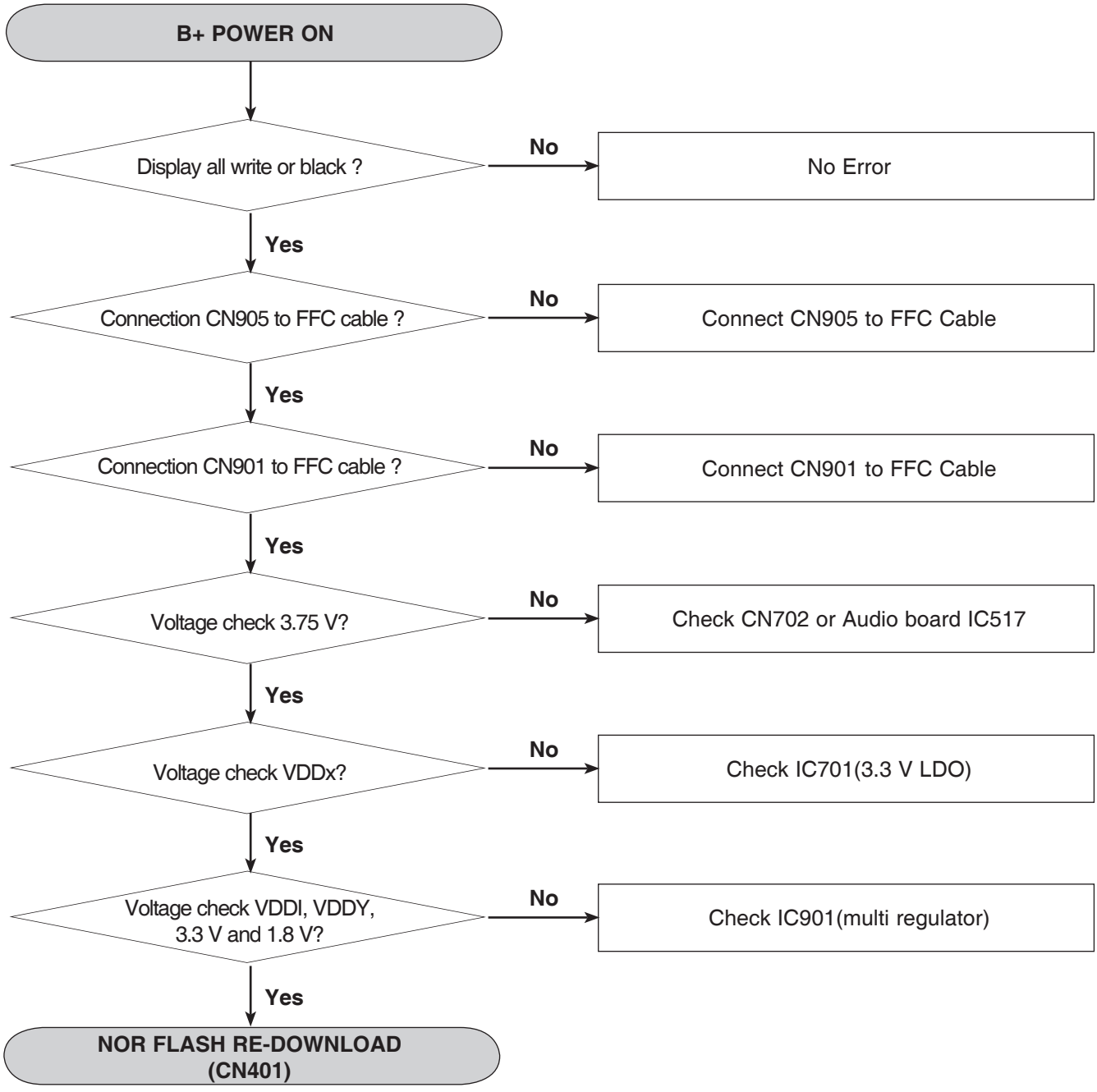
How to update the navigation map and software

To update the navigation map and software, visit the site (http://www.navigation.com/hyundai).

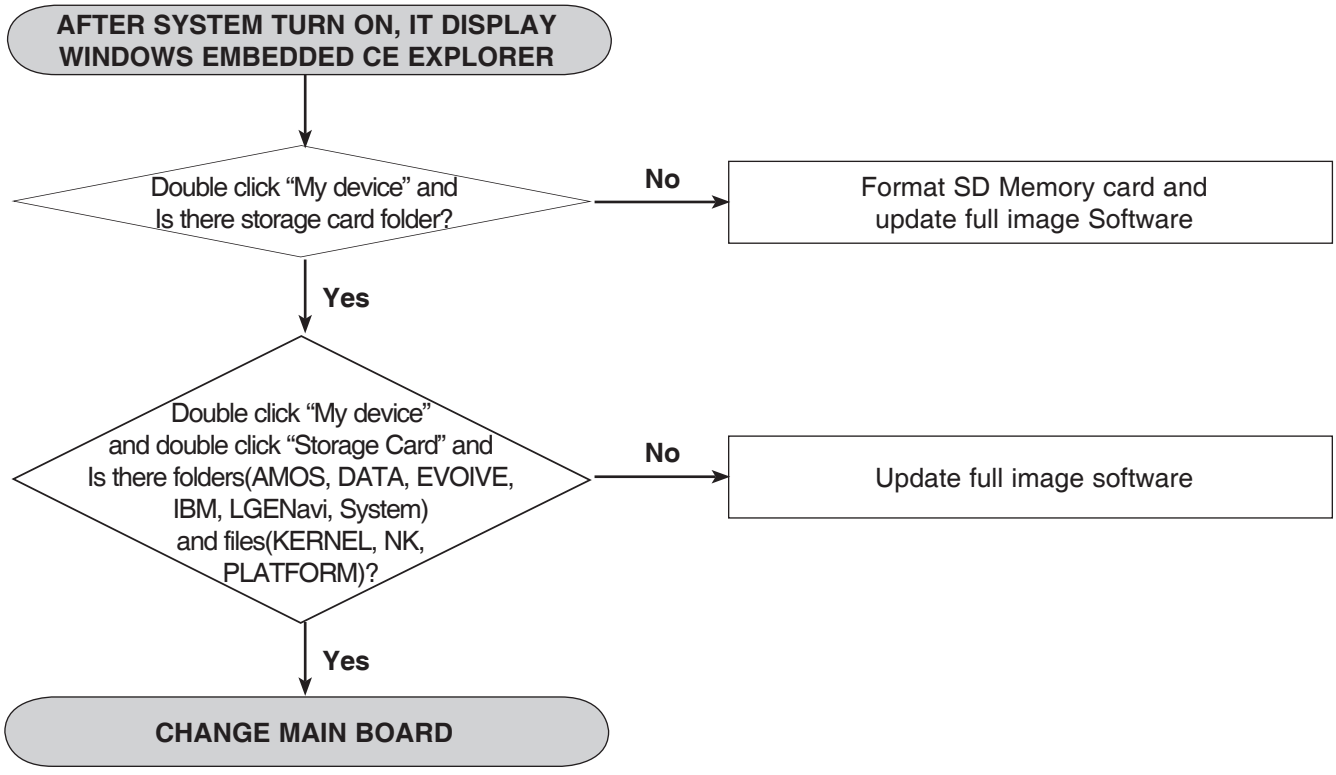
Symptom	Cause	Correction
Power doesn't turn on. The unit doesn't operate.	• The ignition switch is NOT turned ON.	• Turn the ignition switch to ON.
	• The ignition switch is NOT set to ACC.	• Set the ignition switch to ACC.
	• The power of unit is turned OFF.	• Turn the unit on by pressing ⏻ on the control panel.
	• Noise and other factors are causing the built-in microprocessor to operate incorrectly.	• Turn the unit off and then on.
Playback is not possible.	• The disc is dirty.	• Clean disc.
	• The loaded disc is of a type this unit cannot play.	• Check what type the disc is.
	• The disc is inserted upside down.	• Insert the disc with the label upward.
	• The fi les on the disc are an irregular file format.	• Check the fi le format.
There's no sound.	• The volume level is low.	• Adjust the volume.
	• The mute is on.	• Turn the mute off.

MAIN PART

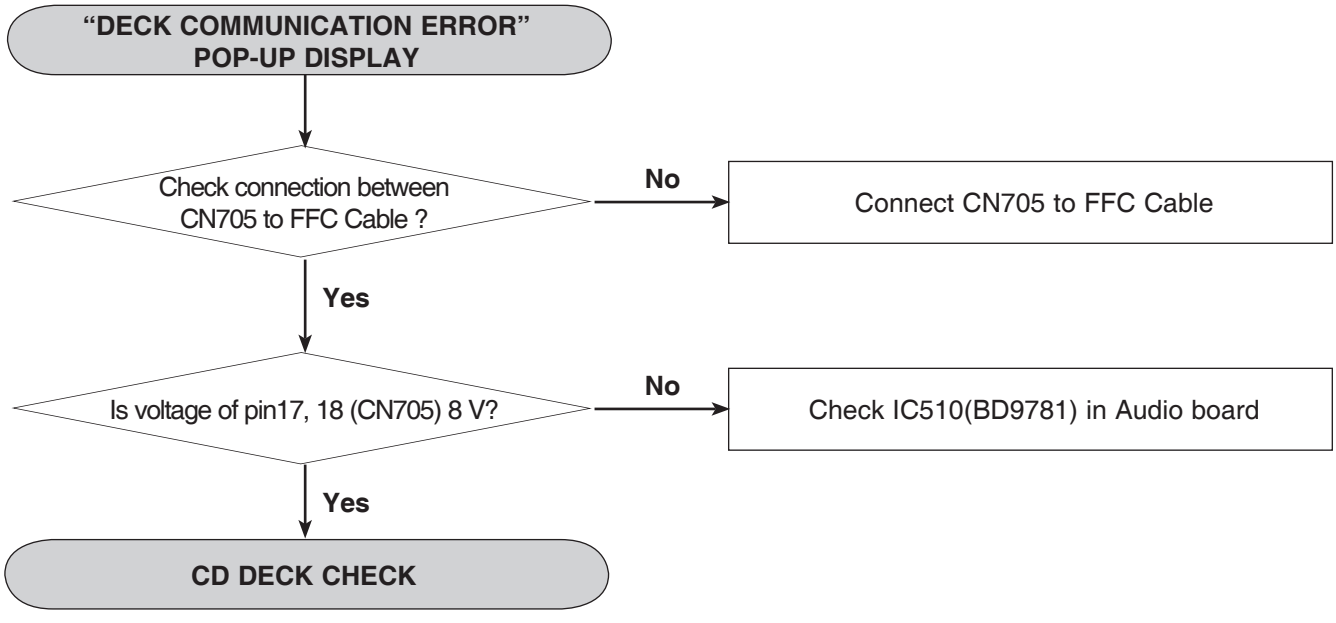
• SYSTEM NOT OPERATE (NO BOOTING)



• SYSTEM NOT OPERATE (DISPLAY WINDOWS EMBEDDED CE EXPLORER)

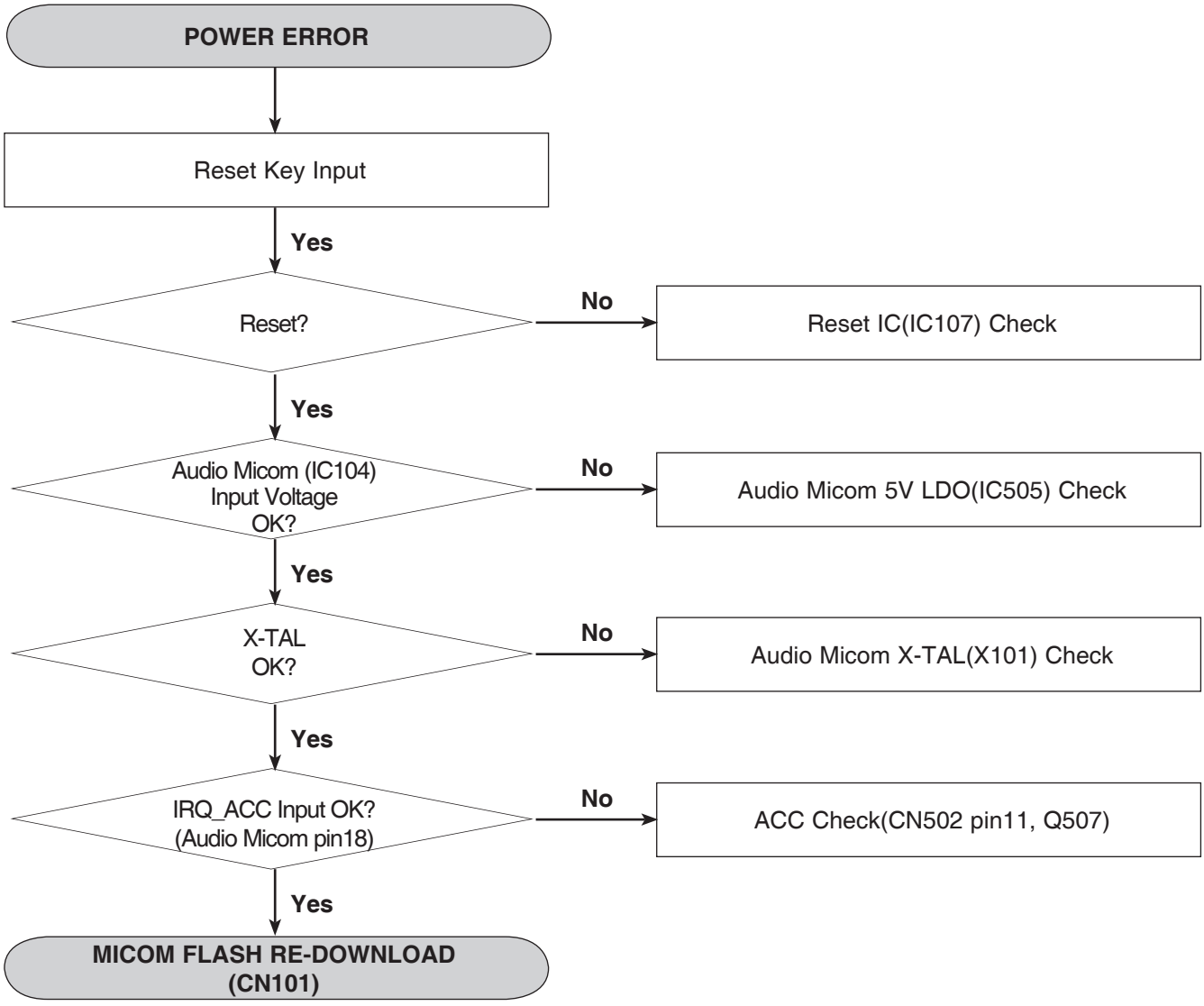

AFTER SYSTEM TURN ON, IT DISPLAY WINDOWS EMBEDDED CE EXPLORER
Double click "My device" and Is there storage card folder?
No
Format SD Memory card and update full image Software
Yes
Double click "My device" and double click "Storage Card" and Is there folders(AMOS, DATA, EVOIVE, IBM, LGENavi, System) and files(KERNEL, NK, PLATFORM)?
No
Update full image software
Yes
CHANGE MAIN BOARD

• CD DECK NG ("DECK COMMUNICATION ERROR" POP-UP DISPLAY)

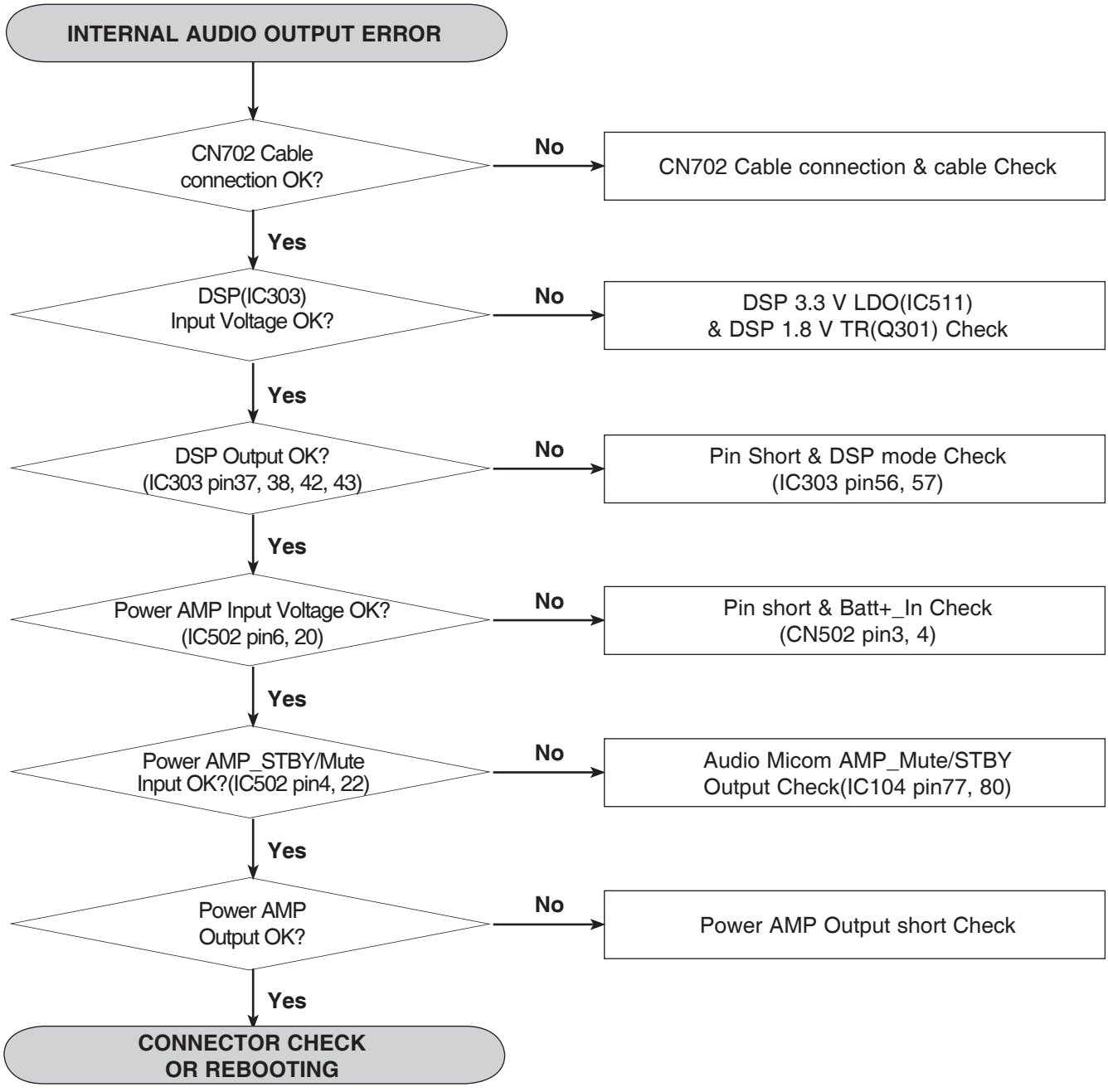


AUDIO PART

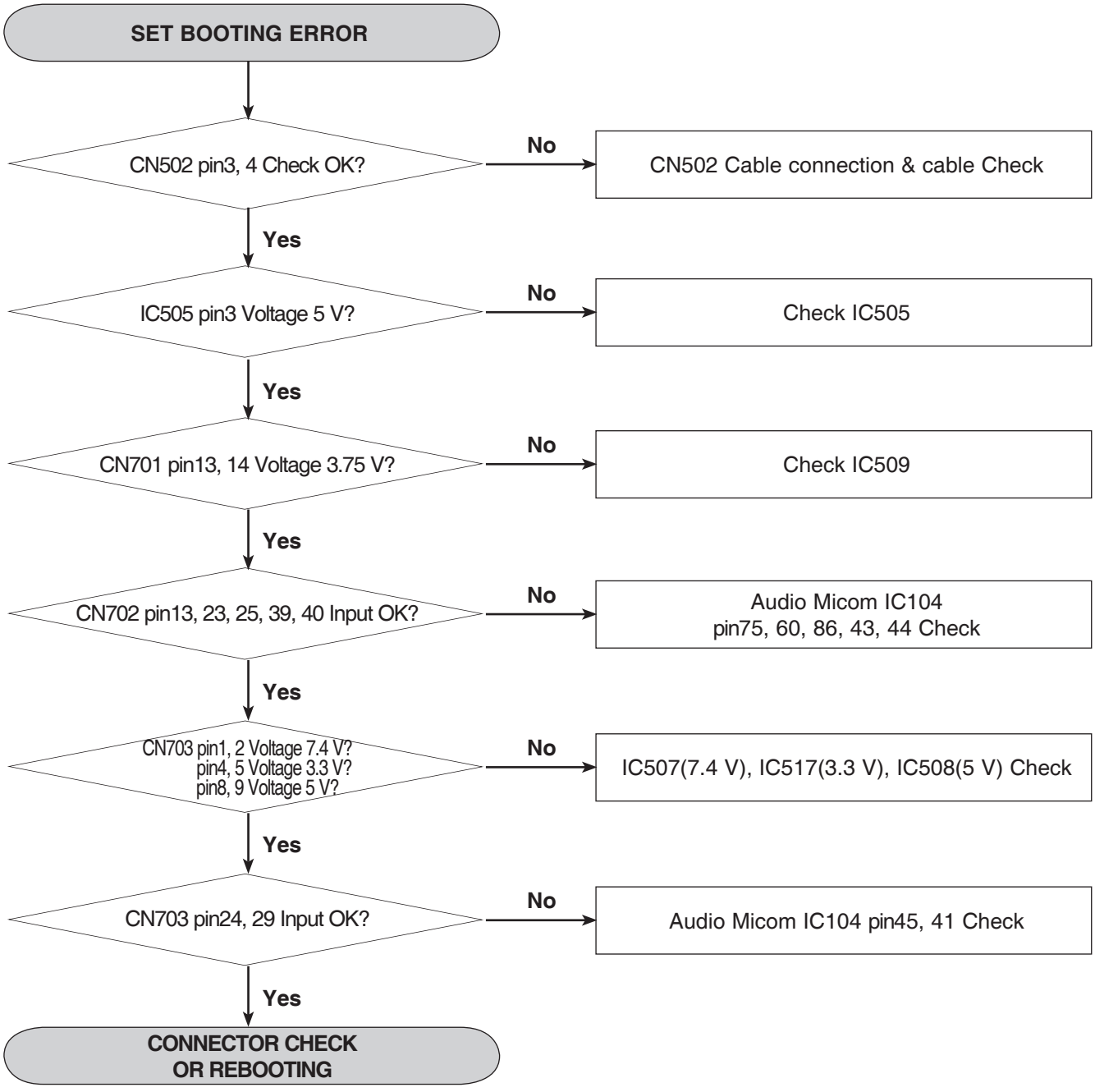
• MICOM OPERATING ERROR



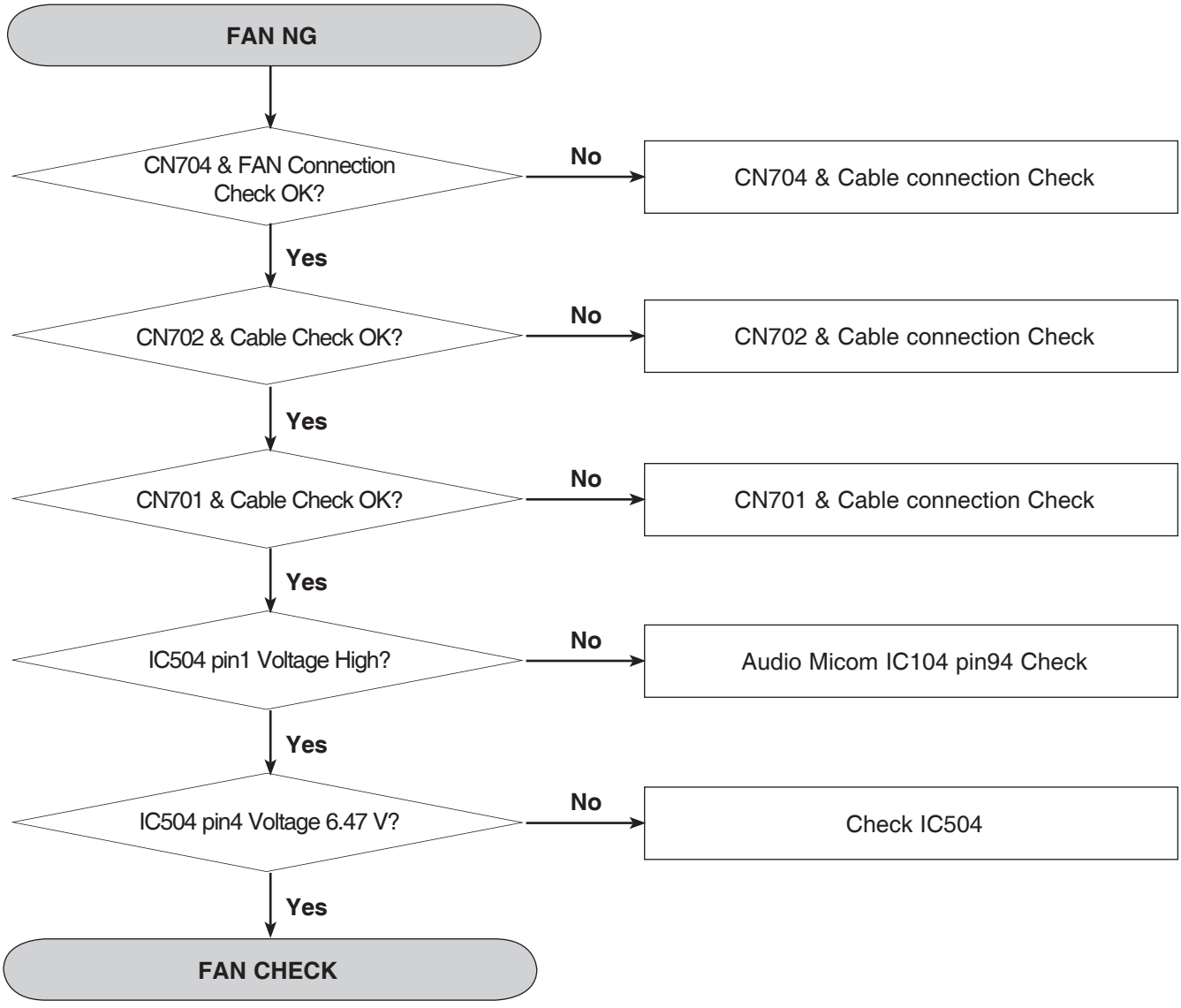
• INTERNAL AUDIO OUTPUT ERROR (OPTION: INTERNAL AMPLIFIER)



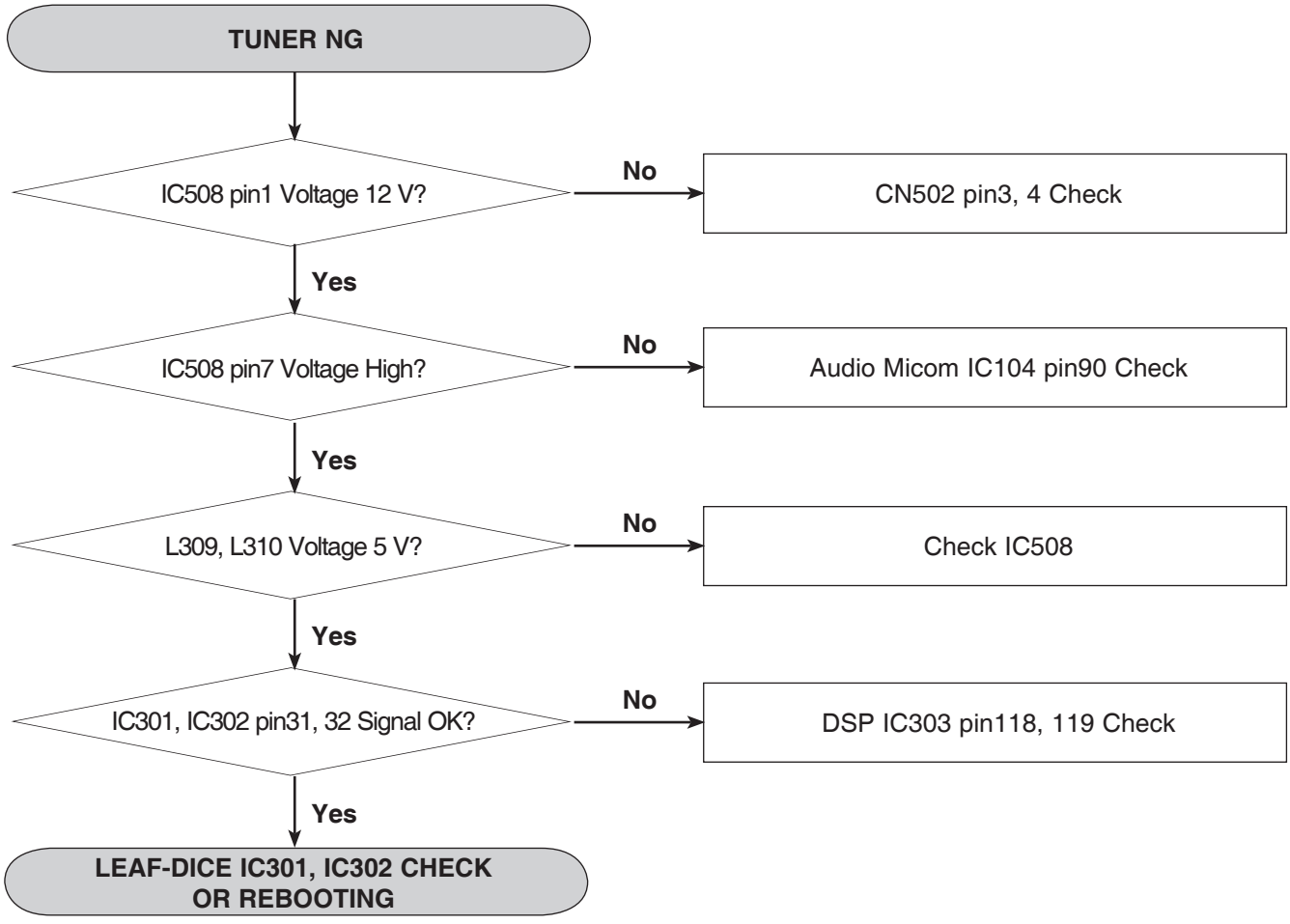
• SET BOOTING ERROR



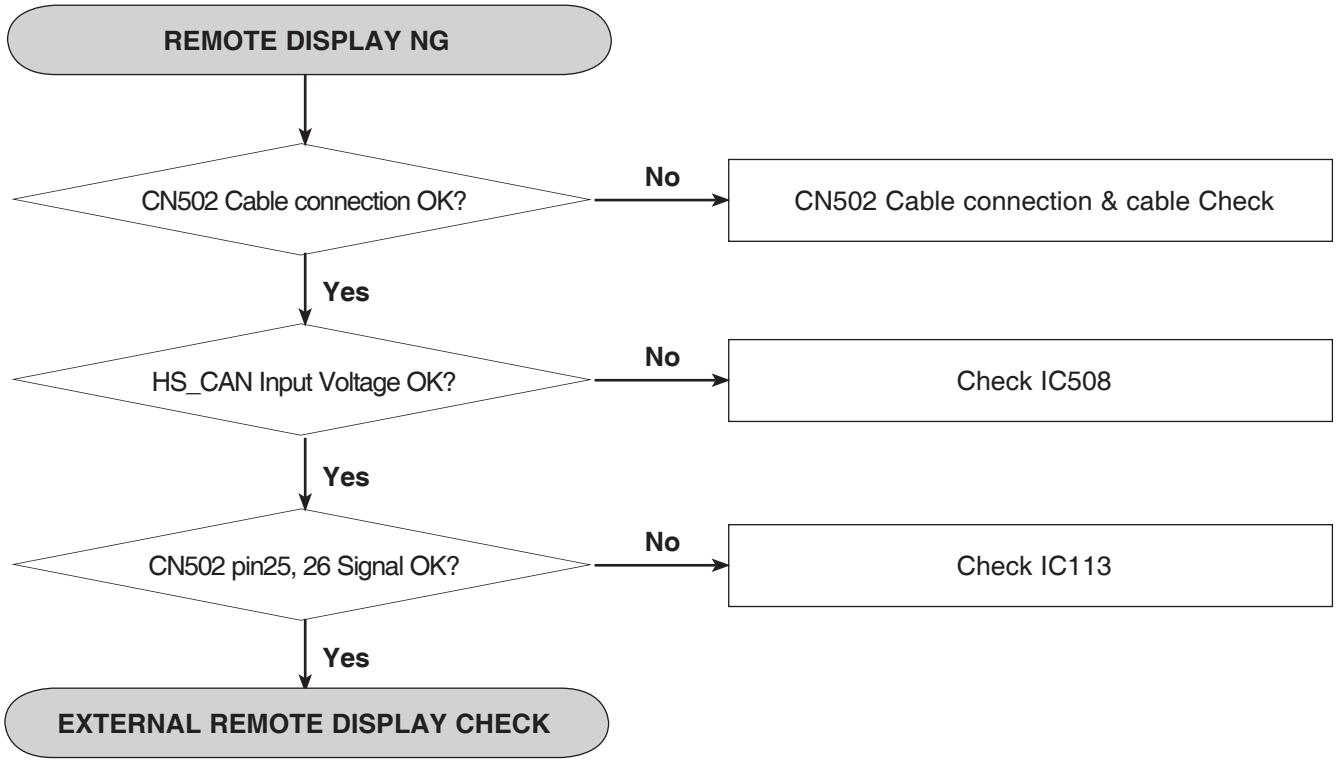
• FAN NG (OPTION: INTERNAL AMPLIFIER)



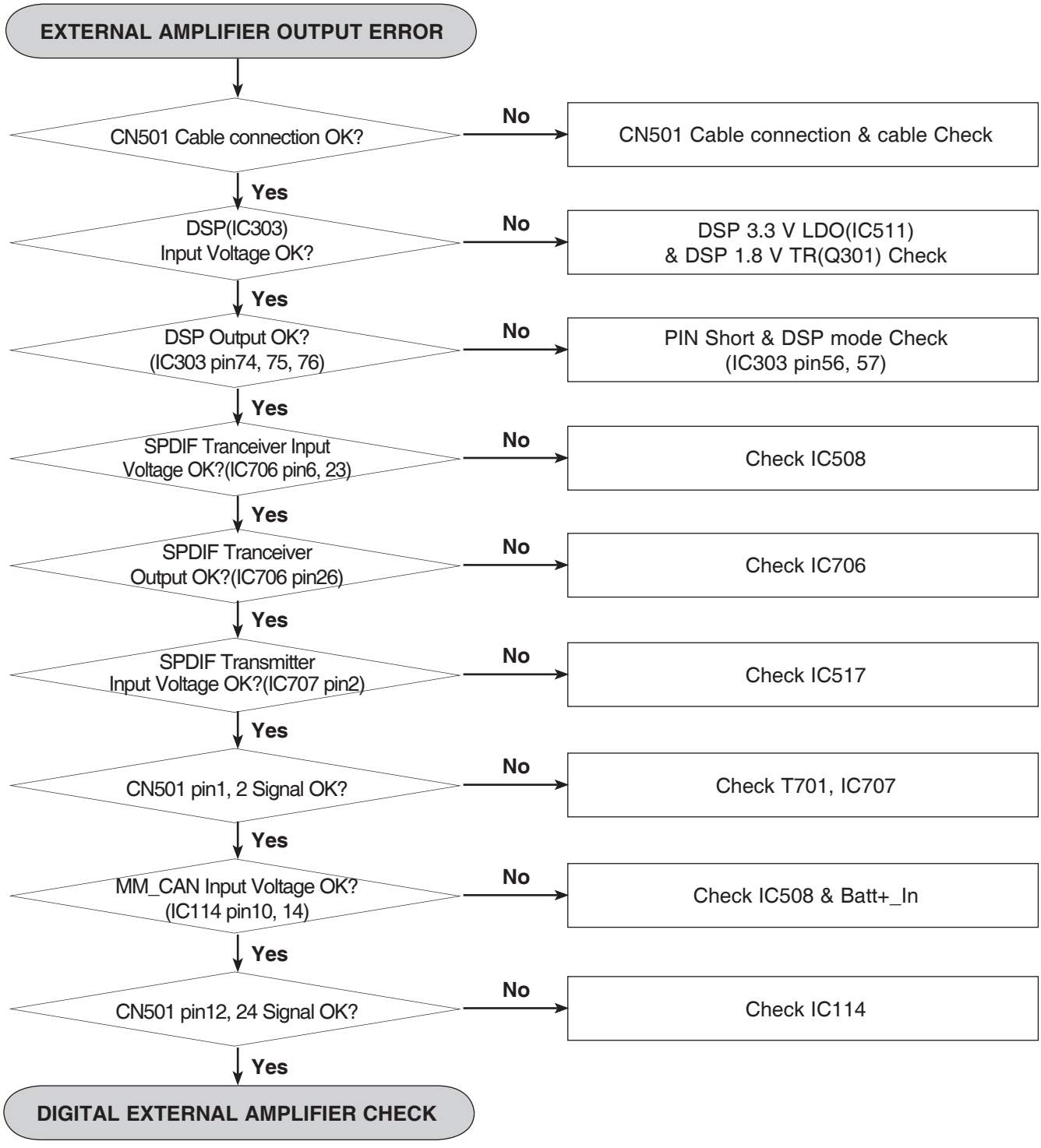
• TUNER NG


TUNER NG
IC508 pin1 Voltage 12 V?
No
CN502 pin3, 4 Check
Yes
IC508 pin7 Voltage High?
No
Audio Micom IC104 pin90 Check
Yes
L309, L310 Voltage 5 V?
No
Check IC508
Yes
IC301, IC302 pin31, 32 Signal OK?
No
DSP IC303 pin118, 119 Check
Yes
LEAF-DICE IC301, IC302 CHECK
OR REBOOTING

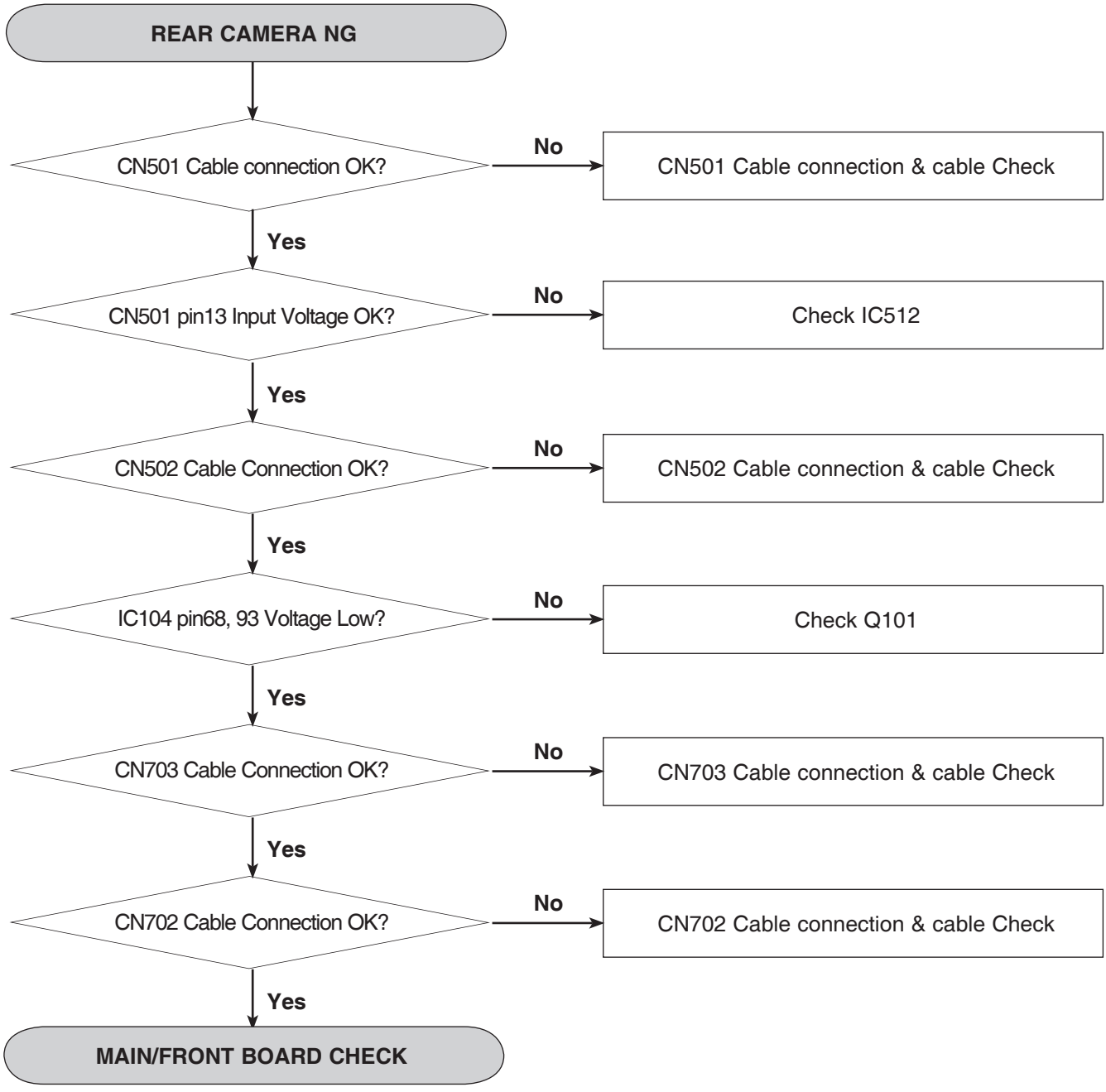
• REMOTE DISPLAY NG (OPTION: REMOTE DISPLAY)



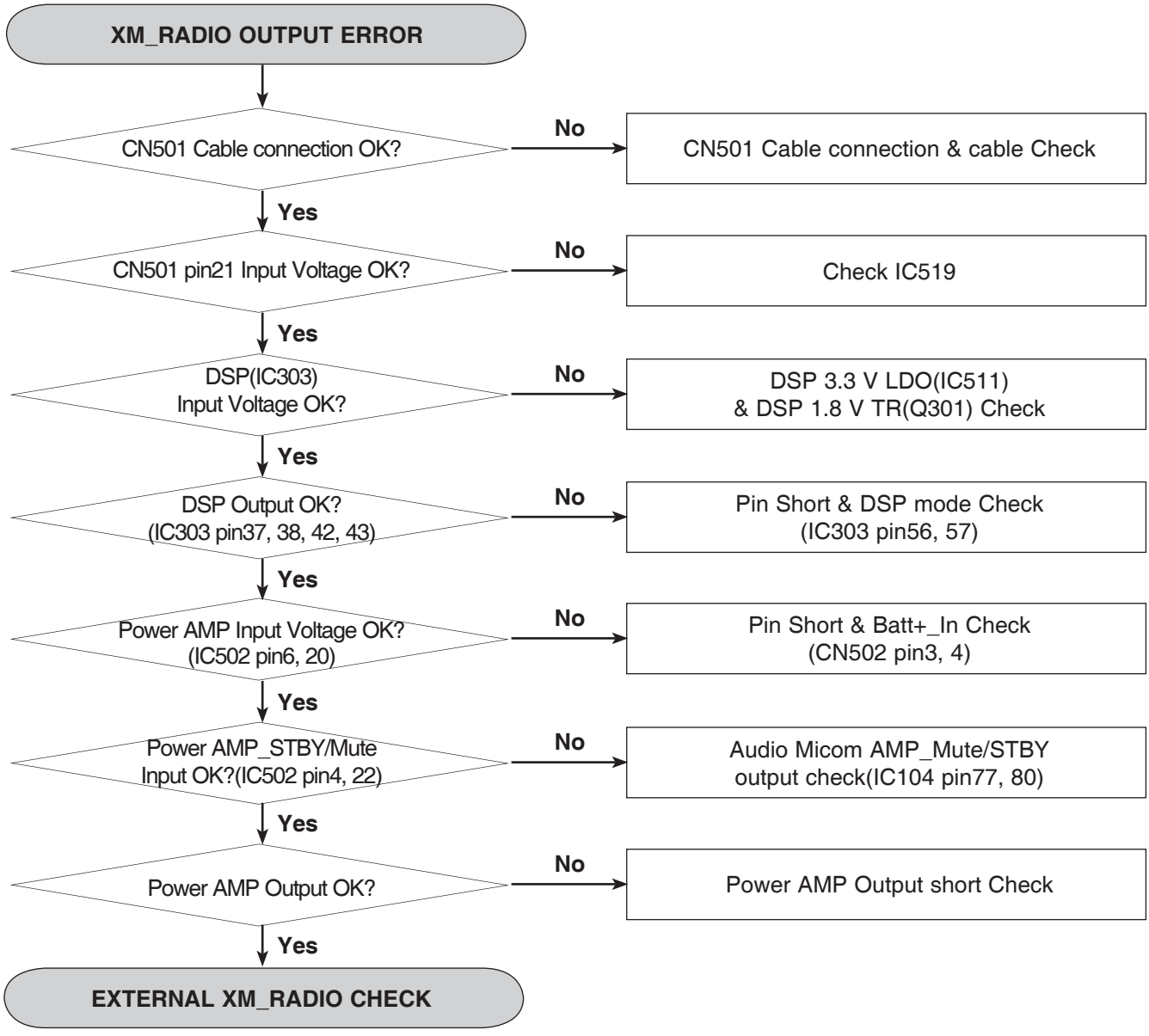
• EXTERNAL AMPLIFIER OUTPUT ERROR (OPTION: EXTERNAL AMPLIFIER)



• REAR CAMERA NG (OPTION: REAR CAMERA)

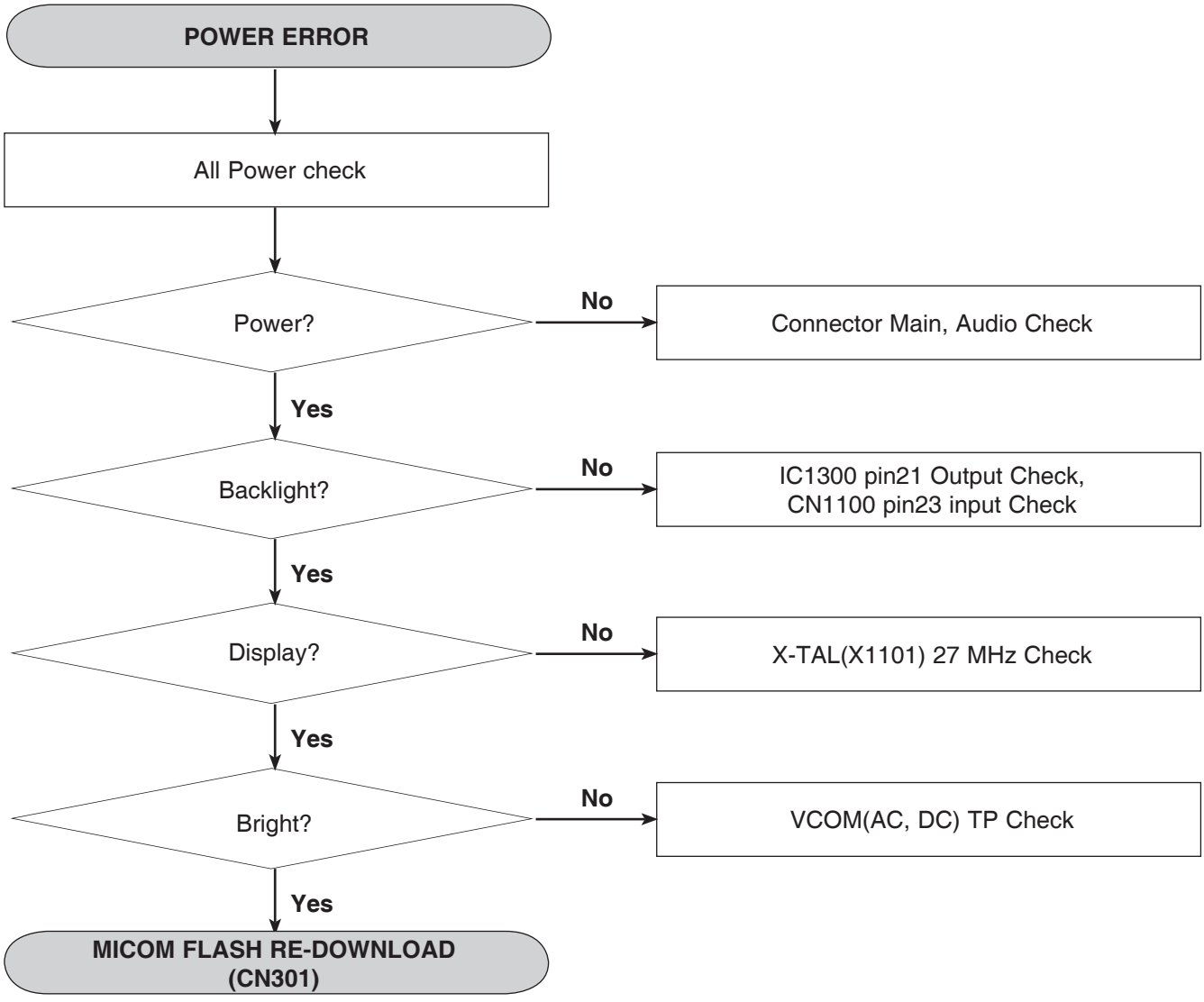


• XM_RADIO OUTPUT ERROR (OPTION: XM_READY)



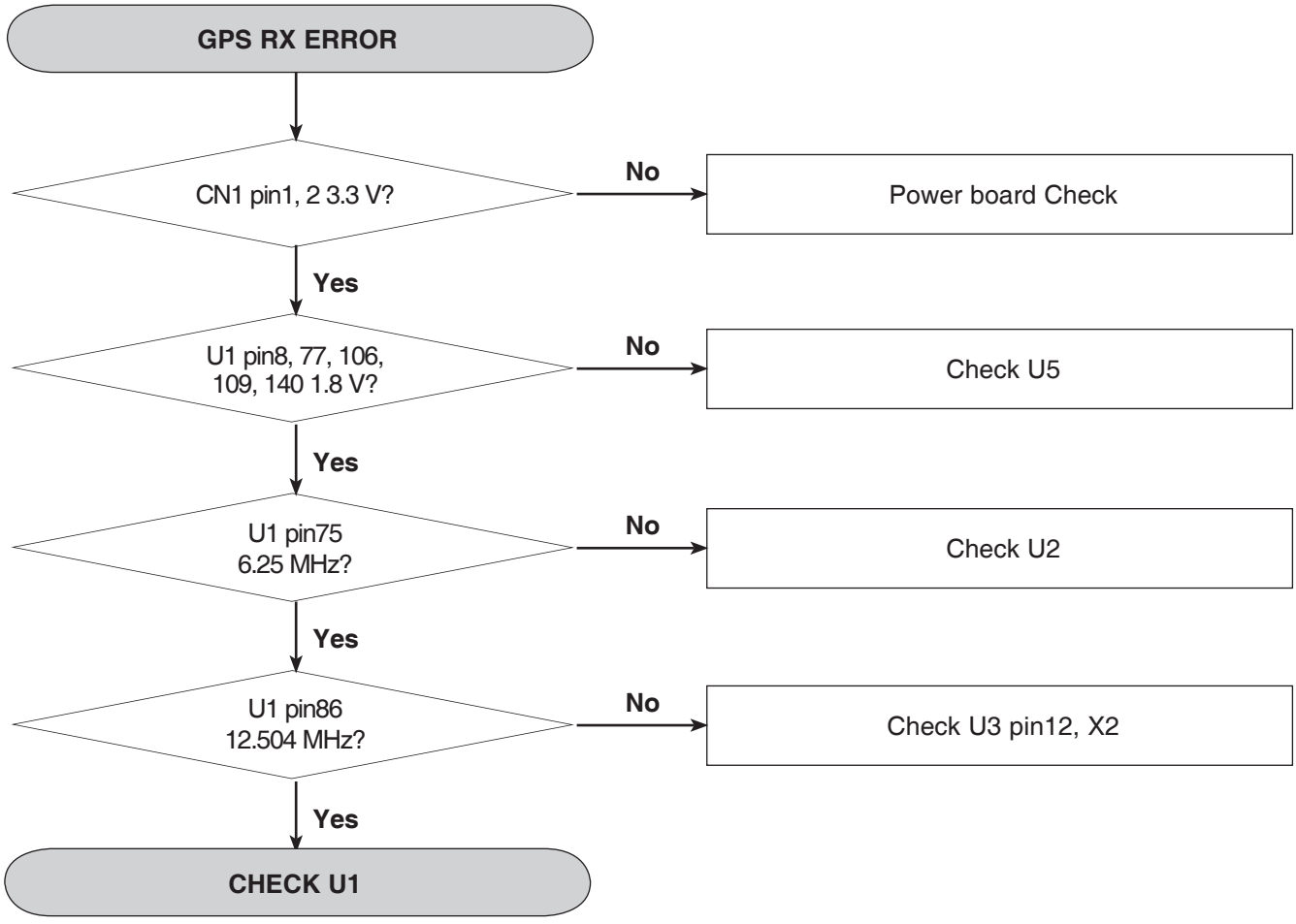
FRONT PART

• MICOM OPERATING ERROR

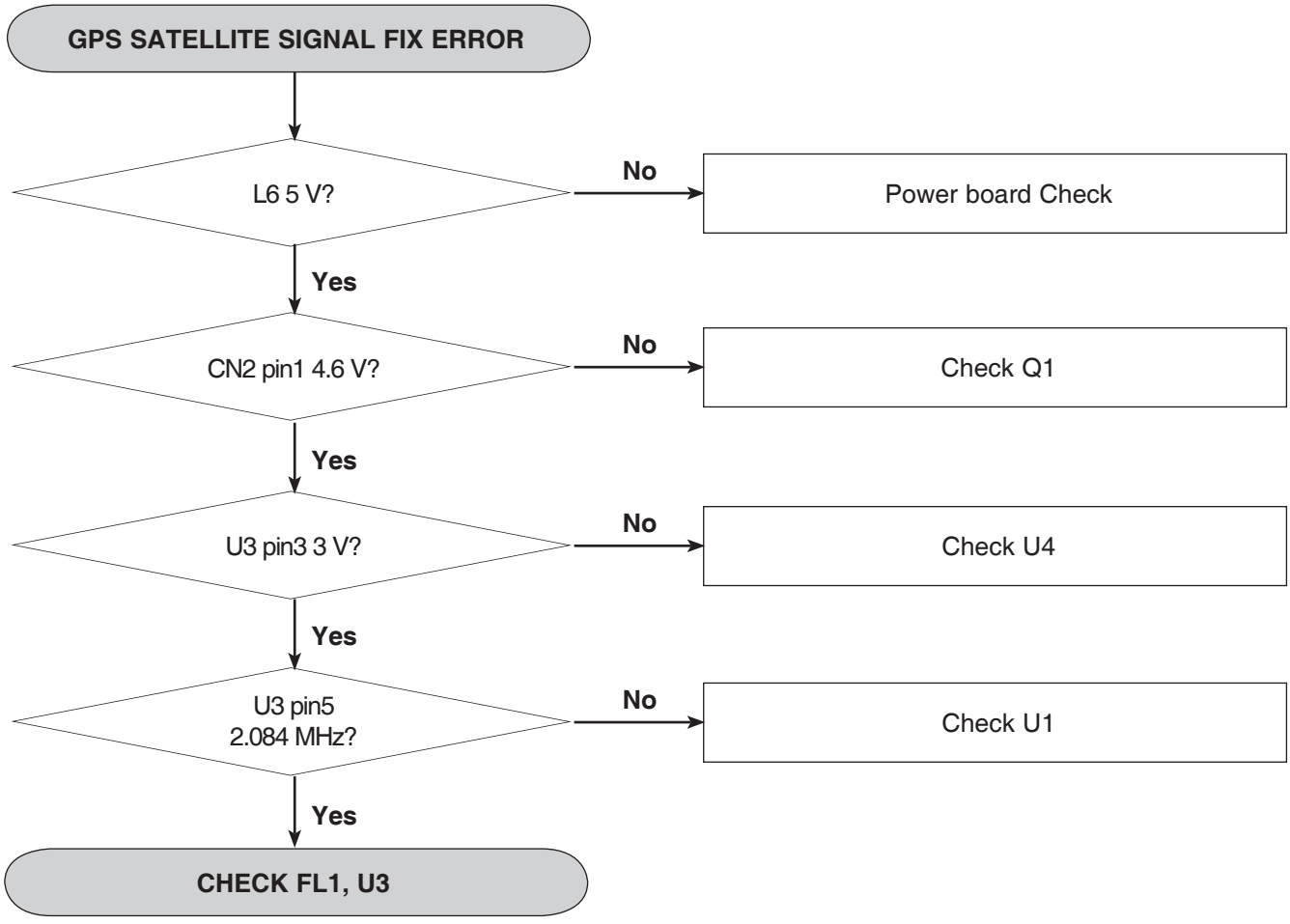


GPS PART

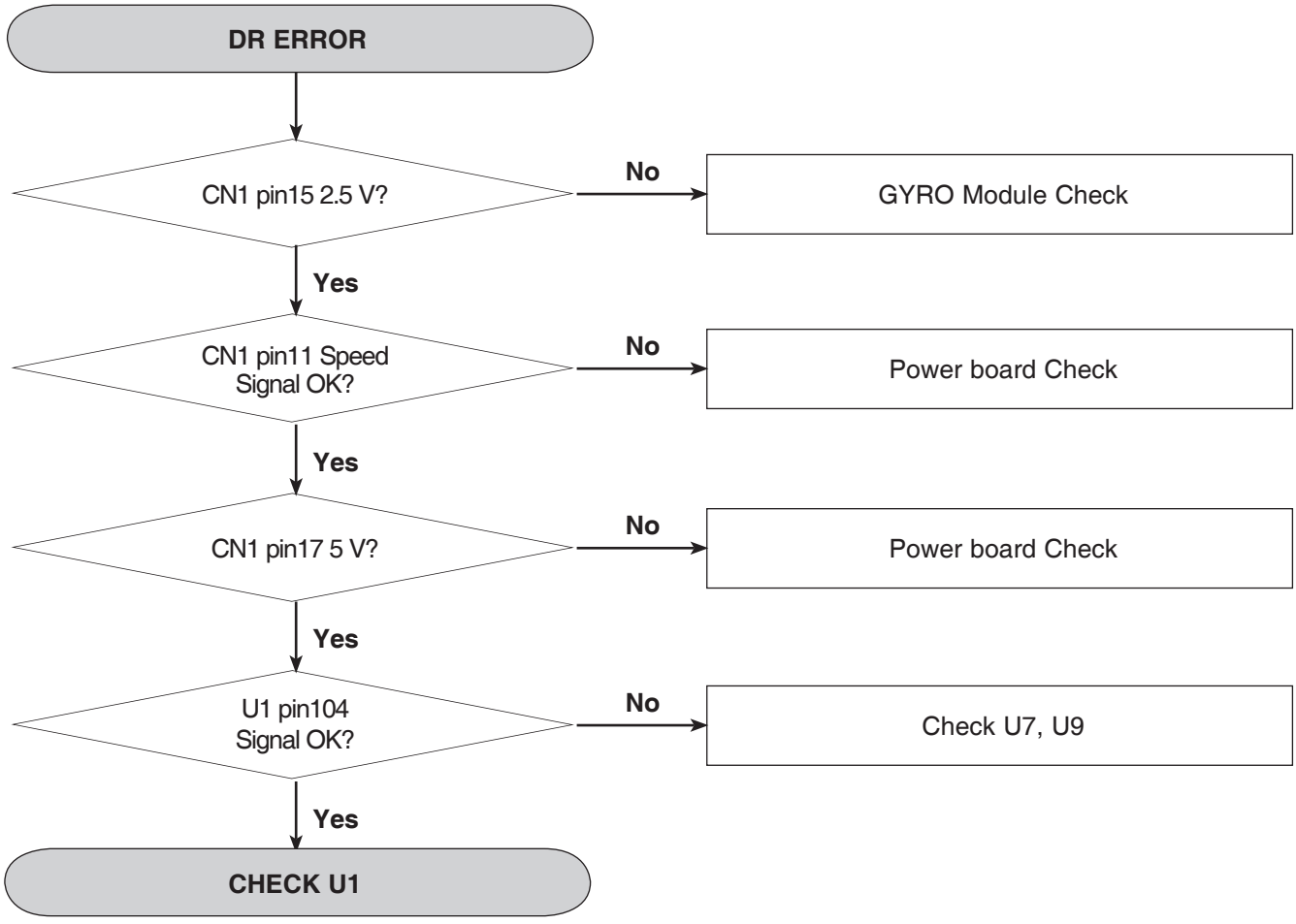
• GPS SIGNAL COMMUNICATION ERROR



• GPS SATELLITE SIGNAL FIX ERROR



• DR ERROR


DR ERROR
CN1 pin15 2.5 V?
No
GYRO Module Check
Yes
CN1 pin11 Speed Signal OK?
No
Power board Check
Yes
CN1 pin17 5 V?
No
Power board Check
Yes
U1 pin104 Signal OK?
No
Check U7, U9
Yes
CHECK U1

SECTION 10. REPLACEMENT PARTS LIST

[CONTENTS]

• REPLACEMENT PARTS LIST. 10-1